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ABSTRACT

This publication presents the speeches and workshop recommendations of participants at the governor's conference on Environmental/Conservation Education. The goals of the conference were to examine the issue areas of environmental/conservation education, to suggest ways and means to increase opportunities for environmental/conservation education in schools and among all ages of people, and to solicit the ideas of participants and the viewpoints of groups the participants represent for implementing environmental/conservation education. Speech topics included Values and Environmental Education, Land Use, Air, Water, Soil, and Open Space. A summary of the conference is given, along with a listing of the participants, in the concluding sections. (Author/MA)

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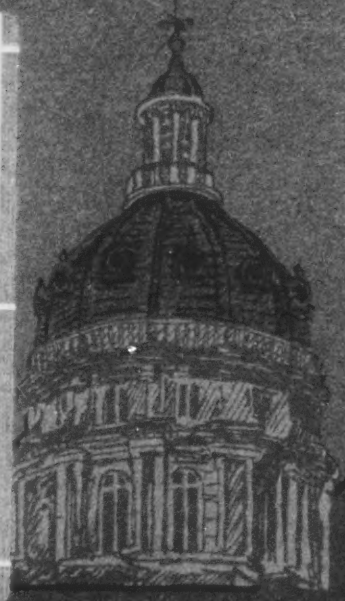

Proceedings
of the
Governor's
Conference
on
Education

Environmental/Conservation

Conference · April 25-26, 1971

SE 024 311

Proceedings of the

GOVERNOR'S ENVIRONMENTAL/CONSERVATION EDUCATION CONFERENCE

April 25-26, 1977

SPONSOR:
Governor's Committee
on Conservation of Outdoor Resources

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Proceedings of the GOVERNOR'S ENVIRONMENTAL/CONSERVATION EDUCATION CONFERENCE April 25-26, 1977

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GOVERNOR'S ENVIRONMENTAL/CONSERVATION EDUCATION CONFERENCE

Steering Committee

Governor Robert D. Ray
Honorary Chairman

Mr. Sherry Fisher, Governor's Committee on Conservation of Outdoor Resources
Chairman

Mr. William Edgar, State Environmental Education Advisory Committee

Mr. William Brabham, Iowa Conservation Commission
Mr. Bernard Clausen, University of Northern Iowa
Mr. James Cooper, Iowa Natural Resources Council
Mr. Lee Dallager, Izaak Walton League
Dr. George Ebert, Iowa State University
Dr. Ebert Eldridge, Iowa State University
Ms. Dee Engstrom, Area Education Agency 7
Mr. William Greiner, Iowa Department of Soil Conservation
Mr. Michael Gross, Iowa Conservation Education Council
Dr. Donald Gustafson, Iowa State University
Honorable Robert Lounsberry, Secretary of Agriculture
Mr. David Lyon, Office of Planning and Programming
Ms. Nancy Lundstrom, Iowa Federation of Jr. Women's Clubs
Ms. Linda Martin, Area Education Agency 7
Mr. Charles Miller, Iowa Department of Environmental Quality
Honorable Wendell Pellett, Representative, Atlantic
Mr. Ralph Schlenker, Governor's Committee on Conservation of Outdoor Resources
Mr. Richard Sweeney, Iowa State Education Association
Dr. John Timmons, Iowa State University
Mr. Duane Toomsen, Department of Public Instruction
Dr. Robert Yager, University of Iowa

Introduction

People, water, soil, air, and natural resources are interdependent and connected. As citizens of Iowa we share a common heritage and interest in the relationships that bind us to these resources. Balance requires a knowledgeable populace devoted to the maintenance of the systems that provide us with life and sustenance.

Recognizing the need for an informed population and the educational potential and leadership which many groups could provide, Governor Robert D. Ray called the Governor's Environmental and Conservation Education Conference. The goals of the conference were to examine the issue areas of environmental/conservation education, to suggest ways and means to increase opportunities for environmental/conservation in schools and among all ages of people, and to solicit the ideas of participants and the viewpoints of groups the participants represent for implementing environmental/conservation education.

The format of the conference provided for three keynote speakers to set the stage for small group sessions meeting in the afternoon of the first day and the morning and early afternoon of the second day. Further background information for the small group sessions was provided on the afternoon of the first day by a panel of four resource experts and by mini-university sessions meeting the evening of the first day. A conference summary was provided on the afternoon of the second day by two rapporteurs: Ms. Jean Lloyd-Jones and Mr. Bernard Clausen. Closing remarks and summaries were provided by Mr. Lauren Soth, editorial writer, Des Moines Register and Tribune.

- The small group sessions used a nominal group technique which is a structured group meeting that proceeds through the following steps:

1. A focus question or issue is provided for the small group.

2. For five to ten minutes each individual writes ideas on a pad of paper. During this time there is no conversation among participants.

3. The first sharing of ideas proceeds in round robin fashion until all members indicate they have no further ideas to share. These ideas are written by a recorder on a flip chart but are not discussed at this time.

4. Each item is then discussed by asking clarification questions or stating support or non-support.

5. Independent voting on priority ideas is conducted with the group decision being mathematically derived through rank-ordering or rating.

- The objectives of this process are:

1. To assure different processes for each phase of creativity.

2. To balance participation among members and to develop group ownership.

3. To incorporate mathematical voting techniques in the aggregation of group judgment.[1]

- The focus questions for the small groups for the conference were:

1. What are some problems in water resource management that are amenable to public action?

2. What are some problems in land use management that are amenable to public action?

3. What are some problems in natural resource management that are amenable to public action?

4. What are some problems in providing environmental/conservation education for all sectors of society that are amenable to public action?

5. What are some problems in soil management that are amenable to public action?

6. What are some problems in open space acquisition that are amenable to public action?

[1] Audie L. Delbecq, Andrew H. Van de Ven and David H. Gustafson. *Group Techniques for Program Planning: A Guide to the Nominal Group Technique and Delphi Process*, (Glenview, Ill.: Scott, Foresman, 1975), pp. 8-9.

7. What are some problems in helping service organizations become aware of their roles in conservation/environmental education that are amenable to public action?

8. What are some problems in energy resource management that are amenable to public action?

9. What are some problems in changing public environmental awareness into public action?

10. What are some problems in helping citizens recognize and exercise their rights and responsibilities in conservation/environmental decision-making;

11. What are some problems in raising public awareness regarding certain life styles related to conservation and the environment that are amenable to public action?

12. What are some problems in air quality management that are amenable to public action?

13. What are some problems in helping educators recognize their responsibility to the environment that are amenable to public action?

14. What are some environmental problems in the urban environment that are amenable to educational action?

15. What are some problems in population dynamics that are amenable to public action?

WELCOME

Dr. Robert D. Benton
State Superintendent of Public Instruction

Thank you very much, Ralph. I am happy to have the opportunity for just a few words, and I will keep them to a few words, because in looking at your program this morning, I know that you have those who are certainly much more expert than I in dealing with this particular area. So, certainly I would like to reserve most of the time for their remarks. But, on behalf of the State Board of Public Instruction and the State Department of Public Instruction, I would like to welcome all of you to this rather significant conference.

I think it is significant in a number of ways. This significance was perhaps brought into focus just last week by President Carter's message on energy and the energy crisis and some of his proposals in trying to deal with that. I think it is also appropriate that we deal with our resources at this time of year. As I drove up here, I couldn't help but feel that spring was in the air. I saw many farmers and other people working in the area that we address ourselves to--this great resource that we have here in the Midwest, the land and all that it implies. So, I am very happy to welcome you on behalf of those two groups to this particular conference on the conservation of our outdoor resources.

I thought of a little story that I might use to kind of bring this type of conference into focus, because, even though we have been talking about conservation and we have been talking about our environment for many, many years--decades, in fact--sometimes we wish we could do things a little differently than we have done. They tell this story of the mother of nine children who was sitting on the porch one evening with her husband, talking over the events of the day, and they were watching one of their nine children, little Jimmy--four-year-old Jimmy--who was playing on the sidewalk out in front of the house. On that particular day, the street crews of that city had laid some new tar and gravel on that street, and as little four-year-olds are wont to do, Jimmy was literally covered from head to toe with the grime and grit. The sun was going down, it was getting dark, and little Jimmy came toddling toward his parents who were sitting on the porch; and the mother took one look at this little guy literally covered from head to toe with dirt, grime, grit, grease, tar, and things like that, and remarked to her husband, "You know, it might be easier to have another one than to clean this one up."

I realize that when we start taking a look at our environment, and when we start taking a look at the things that we have done or have failed to do in years past in this area, it just might be easier; it might seem more simple to just start over, to scrap everything we have done and to start over. I would, of course, suggest to you and submit to you this morning that that is not a realistic point of view. But it doesn't mean, though, that we shouldn't take a look at where we are and that we shouldn't be willing then to, in fact, drop those things that we have been doing and to develop and to adopt new strategies. I hope that out of this conference would come some new ideas, some new thoughts, and new strategies on how we might really preserve this great resource that we have here in Iowa and in the nation as a whole.

Duane Toomsen of our staff has already been introduced to you. I want to take this opportunity to publicly commend the fine work that Duane has done. I have been state superintendent for about five years and, I think, four years of those five years Duane has been our environmental education consultant. He has done, in my opinion, one of the finest and one of the most outstanding jobs of any of our people in trying to get our educational system to respond to a need; and the type of work and the type of energy that he has exerted in working with the classroom teachers and others, I think, has made inroads in this particular area. Hopefully, a conference like this will help us get beyond the classroom--get beyond the elementary and secondary classroom--perhaps to develop and to continue to develop an awareness and a perception on the part of the citizenry as a whole.

Again, on behalf of the Department, welcome to this conference. I am sorry that I am not going to be able to spend the morning with you. I do have to get back to Des Moines right away, but I am very thankful that I have been asked to make these few remarks to you at this time. So, welcome, and best wishes.

THE GOVERNOR'S ADDRESS

The Honorable
Robert D. Ray
Governor of the
State of Iowa

The other day Pat Paulsen, the comedian, was in Des Moines. When he spoke he made a rather profound statement...he said, "The future lies ahead." The fact is the future lies with people like you who will look ahead. Ralph mentioned the Iowa 2000 project and some of you have participated either in Phase 1 or Phase 2 of that. The state conference for Phase 2 will be held June 2. I hope you keep that in mind because I think it would be worth your while and certainly worth our while if you could attend and participate in that state conference.

The Iowa 2000 project, as you know, is a way in which we bring people together to look ahead. One of our big problems is that I can't explain that to the press very well, because whenever I go out and they ask me about it, they are asking what I have as goals for these people who participate in the Iowa 2000 program. It isn't I who sets goals for the Iowa 2000 Project. It isn't a Blue Ribbon Committee approach; it isn't the traditional task force idea, or an ad hoc committee. It is a way in which people can participate in looking ahead to see what kind of state they want Iowa to be like in the year 2000, and what they are willing to do to see that we arrive at that kind of state. So believe me, if you would like to air your views and vent your complaints or criticisms or whatever, and you are willing to listen to other views, then there isn't a better place to go than to the Iowa 2000 conference.

I hope that we don't have any communications problem here at this conference. You all might not agree with each other; that is healthy. But I would hope that we can move from this conference with some consensus and some feeling that we understand each other's point of view. It has been said that a meeting where the people talk, a meeting of this kind, a conference, is a meeting where people talk about what they ought to be doing. I doubt very much if that applies to you people because those of you that I know have been very much active in the environment, the protection of that environment, in conservation and finding ways to preserve that which is good in this state. As Ralph said a moment ago, you represent a cross section of people on the cutting edge of education on the environmental and conservation effort in this state of ours. We have among you teachers and conservationists, men and women from government, from agriculture, and from free enterprise. You are truly a diverse group, but you have been brought together for this two day conference because you share a common purpose. You share an appreciation of the beauty that is ours here in Iowa, our rich land and our air and our water, that are cleaner and more pure than in most spots in this country and certainly, as a matter of fact, than in most spots in the world. You share an understanding of the need to maintain the momentum we in Iowa have been able to achieve as we work to enhance our environment and protect our precious natural resources.

It has been written that "the tendency nowadays to wander," and I am quoting, incidentally, "The tendency nowadays to wander in the wilderness is delightful to see. Thousands of tired and earth shaken, over civilized people are beginning to find out that the wilderness is a necessity and that mountain parks and reservations are useful not only as fountains of timber and irrigating rivers but as fountains of life." That's the end of the quote. Those words were written by John Muir in the year 1901.

Truly, if the need for some place to get away from it all was important seventy-six years ago, it has to be more acute today. Hence in Iowa there has long been a feeling of closeness to the land and our resources. Being an agricultural state, we depend upon the soil and water for much of our livelihood. That is why since I have been governor we have made the environment an important priority in this state. We have created a Department of Environmental Quality to coordinate our attack on pollution of all sorts. We inaugurated an innovative cost sharing conservation program and we have developed an open spaces program to preserve prairie land. Junk car removal and limits on billboards are two more examples of action that has been taken to improve our countryside. Many efforts including Earth Week, Water-Shed Week, Arbor Week, Iowa Beautification Week, have been awareness activities, and I should mention the National Guard's Keep the Scene Green Week.

The Governor's Committee on Conservation of Outdoor Resources has been another vehicle to achieve a number of desired conservation goals. This committee of volunteers provides a broad overview of state policies, including ways and means to preserve and enhance our outdoor resources. Prominent in the process to achieve environmental and conservation education is the effort to constantly promote among our people an awareness and an understanding of our environment and our relation to it. Conservation and environmental concerns are as broad as human society. World specialists predict massive food shortages in the coming decade but food is only one of the many problems.

Mankind has a long history of fighting nature as well as fighting each other. Dissatisfaction has been vented by wars or moving to other parts of the country or even to other parts of the world. But now there are no new continents to discover and no new places that are safe from environmental difficulties. We, therefore, must develop ways of living

in harmony with nature and our world. Helping find the way certainly is one of government's responsibilities. Environmental education is a lifetime process and the lessons are learned very, very slowly. It has been wisely said that conservation is no longer "just a pleasant hobby but indeed a matter of life and death."

I think it's fair to say then that it's urgent for all of us, including, of course, you who are educators, to become aware of the startling dimensions of our outdoor resources. Particularly we must develop within our young people the right kind of an attitude with the groundswell of interest in nature. A number of efforts have already been started by our Iowa government, our Conservation Commission, our Natural Resources Council, our state geologist, and other resource agencies and particularly, of course, our State Department of Public Instruction. The Code of Iowa indicates that in grades 1—6 conservation of natural resources and environmental awareness will be taught, and that additionally they will be taught in grades 7 and 8 as a minimum program. The last General Assembly passed a resolution which among other things calls for an environmental council to assist and advise the Department of Public Instruction in the planning and development of an environmental educational program. This advisory council has been active at work and some of the emerging recommendations I understand have been provided in a packet of information that has been given you. But this is only the beginning. We need to broaden and enlarge our scope.

Ding Darling, the great conservationist and world famous cartoonist, said this, and I am going to quote: "I'm convinced that until a new generation is taught in the public schools of man's utter dependence on natural resources; until the teachers of botany, chemistry, biology, and geology emphasize the functions, rather than the terminology of the respective sciences; until, in fact, we have a majority of the American public schooled in the fundamental principles of conservation, criminal waste will continue to reduce our heritage of natural resources. To me education has become the only pathway that can lead us."

Education not only for our students in public and private schools, but indeed for the entire population of our state, can make a big, big difference. But today I would like to tell you that there are some challenges and opportunities which cannot wait for the next generation of better educated men and women. These are challenges and opportunities that confront us right now. And if we don't face them the next generation of Iowans will hold us accountable. And they should. Specifically I want to visit just a moment with you about three proposals now before the Iowa General Assembly. One is land use. Two is the mandatory deposit for bottles and cans. And three is the hazardous spills protection legislation.

First, land use. Again this year this has been a centerpiece of our legislative program. Few issues have prompted as much comment, both pro and con. The facts clearly speak for themselves. Every year in our state prime agricultural land is taken out of production for commercial or residential development. Good top soil covered by concrete may make a good parking lot, but we don't think that is good enough. There is now, I think, a recognition of the value of Iowa land, perhaps like no other time in the past. And that recognition should be manifest in sound land use legislation to protect Iowa land. Our Iowans are looking for direction; we can give it to them if the legislature will act this session.

Second, the returnable bottle and can legislation. Former Governor Tom McCall says this was the single most important piece of legislation that was adopted while he was governor of the state of Oregon. The deposit fee for bottles and cans is more than just a good idea. It's the right thing to do. The recycling and reuse of those containers curbs litter, it saves energy, and importantly, it saves money for the consumer. These facts have been blurred by a loose knit band of special interests. Clearly our focus should be on how this legislation will affect all of the people, not just a few. The deposit for bottles and cans will encourage their return. This we know by the virtue of the experience in the state of Oregon. This in turn will nurture a conservation ethic among the people and to me that's the most significant part of it all. It will create a conservation ethic in the minds of people who will say we will return those bottles and cans and then believe that not only should they keep the bottles and cans from becoming a litter problem, but also paper products and other matters that they might just chuck aside and dump into the ditch.

Now contrast this with the approach which simply says, "Let's order a tax to be paid so that we can hire people to go out and pick up the litter." What kind of conservation ethic does that develop? It's the ethic that says, "Look, I paid a tax for these people to go around and pick up the litter; why not throw it out the car window and give them something to do." The bottle and can legislation is on this week's calendar in the House of Representatives and positive action on the bill will make this a week of accomplishment for the Iowa legislature.

Third, the hazardous spills legislation. In January I submitted to the General Assembly my legislative package which included a recommendation to give the Department of Environmental Quality authority to move in and take charge with legal authority in the event of spillage of dangerous or hazardous materials and chemicals. This item received scant attention in the news media. Little did we know that a close call with the chemical PCB would show us how much we need this legislation. Following the incidents in Fort Dodge and Cedar Falls there was a flurry of activity on the hazardous spills legislation, and it did pass the House of Representatives. Since the safe transfer of the PCB out

of state there has been little action. Hopefully, now it will not take another scare with a toxic chemical to spur final approval of this proposal.

Obviously, these three legislative items will not totally make or break our environmental effort in this state. But, they could be a powerful boost in our ongoing effort to protect our natural resources. This effort is too often buried in the other news which we see and read and listen to. Nationally there has been a steady current of comment and stories about the energy crises. In Iowa a flood of news about the drought. Good conservation practices and environmental action are closely tied to those critical problems. Actions in one area will impact on the others.

That is why I am pleased that you people are here today. You're here at Iowa State University to participate in this conference, and I hope that you are not meek or timid. I hope you do participate and you do express some idealism as Ralph mentioned earlier. I hope that idealism is coupled with some realism. But we're looking for ideas. We're looking for ways in which we can make government work better. We're looking for ways in which we can protect our natural resources.

This meeting has brought together many leadership elements across our state and many interested citizens as well. This is as it should be. Certainly, all segments of our society have a responsibility to become better informed and involved with these issues, and so effect our life styles and our well being. You will not leave here today with the answer to all of the problems. You may not leave here with all of the questions. But, I trust that you will leave here with a better perspective and with a renewed determination to do something about the problems. Hopefully, your contribution here at this conference and your continued efforts back home and with the groups with which you are associated will be a continuing commitment for you in the weeks and the months and the years that lie ahead. If that is the case, your time here will have been well spent. And I can assure you that that time which is precious to you is most appreciated, by Ralph, by Sherry Fisher, who unfortunately could not be here, and certainly by me. Because I'm convinced the longer I'm in a public official capacity, the more we need input from people like you: people who have expertise; people who have understanding; people who have knowledge; people who have a concern and who aren't the nay sayers, who aren't the people that are always looking for something to criticize, but people who are looking for ways in which we can improve what we have. And, if you spend too much time in the negative, then you never get around to the positive.

One of the great experiences I have had during the last few years is to work with people interested in the outdoors and our natural resources and the environment, because most of those people are very positive thinkers. And when they get set back because they don't have all the money they want, or they get set back because they had bad advice or they didn't get the legislation they thought was needed, they don't sit around and mope and pout; they go out and try again, sell people on what needs to be done in a constructive way. And I just hope that as you leave this conference you'll feel that you have learned something; you'll feel that you do have a commitment; you'll feel that there is a willingness on your part to share what you know and to make sure that others learn from your experiences, from your education, from your background, and from what you have gained during this conference.

CONSERVATION, THE ENVIRONMENT
THE VIEW OF A FUTURIST

Dr. Marion Clawson

Dr. Marion Clawson is Land Use and Management Economist for Resources for the Future in Washington, D.C.

Today almost everyone is aware of the necessity to conserve the environment. Let's go back to our opening speaker. It has been so aptly and profoundly said, "It's the only world we have or ever will have, and we must learn to take care of it."

The past decade or so has seen the rise of a mass conservation movement in the United States. Millions of people are now deeply concerned about conservation. The news media now find conservation issues and development worthy of reporting and many new laws have been passed or proposed. And it has not always been that way. Many of us can easily remember when natural resources and conservation matters were simply not of interest to the general public.

It is dangerous to set a precise date when this popular awareness began but 1970 is a good candidate. For in that year President Nixon made one of the strongest environmental statements to ever come out of the White House, and I might add parenthetically never paid any attention to it thereafter. And Earth Day became a college and a high school phenomenan across the land. It is interesting, and I think sobering, to reflect that President Nixon is no longer in the White House and Earth Day has almost entirely vanished from the educational scene.

Will today's mass movement retain its momentum in the future or will interest in conservation flag as it has from time to time in the past? During the past hundred years or more there have been dedicated conservation leaders who had a considerable popular following and who sought actions which since have resulted in much conservation. The national forests, the national parks, the wildlife refuges, and many soil and water conservation programs testify to this early leadership. But many of the earlier movements lost much of their popular appeal and the environment has had to be rediscovered by a new generation. It would be easy to say that the present mass conservation movement is different, that it will be more lasting and more pervasive in its effects than any of its predecessors. But it might also be wrong to say so. Only time will tell how enduring the achievements of the recent years will be. One can hope for permanence, effectiveness, and even for wisdom, but we should not be naively optimistic.

A basic difficulty is that our ability to exploit the environment for our own comfort and well-being has increased at least as rapidly as our awareness of the necessity for conservation. Today we manufacture thousands of chemicals that never occurred in nature without a clear idea of their total consequence to our world or to our lives. We invent and we use machines with an ever increasing capacity to tear up our world: the earth, and the sea, and the undersea——from them we take and consume the accumulations of millions of years. Conservation is a race between the exploiting technologies and forces and the conserving ones, and as new victories are won, new battle fronts open up. Basic science is part of the arsenal for both exploitation and for conservation.

What are some of the characteristics of this modern mass conservation movement, which I think we must understand if its possibilities and its limitations are to be fully and correctly evaluated. One of these characteristics is idealism. The movement's participants typically do not think of what conservation may mean for them personally in terms of higher incomes or better jobs. They are not economic men, coldly calculating wherein lies their best opportunity for self advancement. They devote time, energy, and money in an effort to achieve their goals and objectives with little concern about their individual rewards. They like to think and they often say that their concern is with the society as a whole. One may be critical of the accomplishments of the present conservation movement as I am going to be in a little bit, and at the same time understand and appreciate the idealism of the participants.

Another characteristic of the modern conservation movement is impatience. Once a conservation problem is recognized there is a rush to solve it, to get on with the job. In many instances this impatience has focused on the symptoms of a conservation problem rather than on causes. There's often been a lack of understanding of the depth, the history, and the ramifications of some present use of natural resources. There has often been a neglect of the second, and the third, and the later round of consequences of environmental actions. For instance, when some cities spent the money to adopt the use of high sulphur coal in electric generating plants a few years ago, they did not realize that there was not enough low sulphur coal or oil or gas or that it was inordinately expensive. A proposed remedy may propose new problems that are even more serious than the old ones. Impatience has often been linked with the lack of staying power. And, if the problem does not yield to a quick and clear solution, forget the whole thing and move on to something else.

The modern mass conservation movement has also been marked by a considerable degree of naivete. There often seems to be a belief that someone is polluting or damaging the environment, that he or she can be identified and

prohibited from carrying on as before, and that the whole problem is then solved. There has been very little recognition that consumers must take as much responsibility for environmental problems as most producers. The height of such naivete in my experience has been the bumper sticker that was common at least in our part of the world a few years ago which read, "Pounce on Polluters." It was always pasted on the rear bumper right over the smoking exhaust pipe, and it clearly said someone else is responsible. Now those stickers have disappeared, at least in our part of the world. But, the general attitude, as I think, has survived.

A major difficulty in devising sound solutions is that many conservation actions lack a sound solid scientific base. One person or group may suspect and assert that some chemical is harmful to people, perhaps causes cancer. Another group may argue that the chemical is helpful to people, benefiting them, or enabling them to avoid more serious injury. Both may be right. Or neither may be right. And often we do not know or cannot be sure. There has almost surely been a lot of exaggeration on all sides. Oil spills, sulphur in the air, various chemicals in the water, and other ecological insults do indeed do damage to various forms of life including man. But it is also true that all forms of life including man have great capacity to resist injury and to recover from it and to throw off harmful chemicals. Lacking a sound scientific base, either for or against some action, the arguments are likely to be won by the loudest and the most emotional orator.

The result of these characteristics has been a lot of hasty, ill-conceived, and largely ineffective laws and programs in the conservation field. We as a nation have repeatedly set target dates which we have had to later admit were unobtainable, or we set target objectives which have not been obtained, probably never can be, or we have taken actions that have had to be reversed at a later date. I won't attempt to catalog all of them, but I can recall a few.

I recall the effort to ban phosphates in detergents which was shortly abandoned and reversed. I recall the repeated postponements in the application of the auto exhaust standards. I recall the shifts from coal to oil, and now back again for electric power plants. I recall a substantial shortfall in obtainment of our legislative standards for air and water quality and others. Our environmental efforts to date have been distinguished more for their high idealism than for their solid accomplishments. Nevertheless, much has been accomplished, even if their some of the simple idealisms may have been lost. Despite the characteristics and weaknesses of the modern conservation movement, one would be making a serious mistake to underestimate its power and its strength. People do believe, and deeply so, that environmental conservation is necessary. And I, too, share that concern. Regardless of one's attitude towards the present conservation movement, one should not assume that environmental concerns are shallow or transitory. We will have to deal with the dedicated conservationist for a long, long time.

Whenever society as a whole seeks to have individuals follow some course of action that the individual might otherwise not follow, if left to his own devices, it has a choice between two broad and general paths to its goal. These are voluntarism and compulsion. Society acting through any of its human institutions such as the family, the church, the school, the tribe, or the community may seek to first persuade its members to follow some socially approved course of action, or any of these institutions or government may be used to compel individuals to follow this socially approved course. Life may be sweetened by some gifts, subsidies, bribes, or other inducements, but in the end there is a basic choice between having or not having the choice. In agriculture and in forestry, the United States has chosen the voluntary route on the whole. The Land Grant Colleges, the USDA, and the Extension Service, with their research, their teaching, and their extension, have helped farmers and others follow directions with society as a whole approved. There also have been extensive subsidies. This has been the approach in soil conservation When the national soil conservation programs were launched in the mid-1930's there was a good deal of talk then about making them compulsory, either by giving soil conservation districts legal power to make and enforce land use regulations, or in some other way. That viewpoint was consciously rejected then for soil conservation. The situation is similar for forestry. There have been extensive programs to aid private land owners and forest land owners, but proposals for government regulation of private forestry operations have been rejected.

The environmental conservation measures the past twenty years, and especially those of the past ten years, have turned much more toward compulsion as a means of bringing individual actions in line with social objectives. The air quality, the water quality, the coastal soil management, and other major federal legislation have included substantial compulsory powers, as well as considerable subsidy, at least in some cases. The land owner or user or the water owner user is told what he can or cannot do on his land, or at least what he legally can or cannot discharge from his land into the air or water. Penalties are provided for noncompliance. The extent of the shift toward compulsion is often not realized in part because administrators have been cautious in applying legal power when they feared, and rightly, that their political power did not match their legal power.

Neither the voluntary nor the compulsory approach to environmental conservation is ever completely effective. There will always be some people who scorn advice, education, social pressures, and even subsidy. Some take delight in doing what most people frown upon. This has been the case in all societies and at all times. The voluntary approaches are most effective in a stable and relatively unchanging society and least effective where social change is underway, as it

was, for instance, on the American frontier for many decades. But some people willfully break laws and regulations figuring they can escape detection or punishment, or the gains outweigh the risks. Enforcement of environmental laws and regulations has been substantially less than complete during the past few years, but then the achievement of soil conservation by voluntary means has also been substantially less than complete after forty years of substantial efforts.

One basic difference between the compulsory and the voluntary approaches lies in the thrust of private efforts. The compulsory approach incites many individuals at least to direct their efforts to evade laws and regulations and to oppose the public authorities. The voluntary approach encourages many individuals to devote their ingenuity and resourcefulness to the attainment of a social objective. For some kinds of individual actions, for the potential risk to the society is very great, it would be socially irresponsive to rely wholly on voluntary compliances. But laws and regulations are not always affective. And, if widely evaded, they may bring the whole effort into disrepute as happened in this country in the prohibition period, which we older people can well remember.

The real task of social engineering is to devise the optimum mix of voluntarism and compulsion. Society, the government, and the administrative agency must have voluntary acquisition, acquiescence, or support of a vast majority of the total population if a program is to be successful. Compulsion can be affective, if at all, only against a relatively small minority. The time may have come when some degree of compulsion or at least the real possibility of compulsion would be affective in soil conservation. Perhaps more effort could profitably be directed enlisting the real cooperation of business, municipalities, and individuals in air and water pollution control. Compromises are always difficult, and someone will always allege that too much will be sacrificed to the other side, but absolutism has severe limits too. Complete avoidance of all risk is impossible. If one is to eat, to drink, to move about, or simply to exist, one runs some risk of injury.

Attempts to avoid all risks may in turn create more risk. Let's take a current example. Banning saccharin because it may cause cancer in some people under some conditions may seem like reducing a risk, but the near surety of harmful obesity by a far larger number of people may be an equal or a greater risk. One could, I suppose, imagine an environmentally riskless society and style of life. Although I confess I do not know how it could be devised or what it would look like. But, would it be a world worth living in? As a society, I think you must increasingly weigh all risks including those about which little is known and choose styles of living in resource use that will reduce risks. But we are likely to minimize the overall risk by focusing on only one hazard and attempting to reduce it to zero.

What about the future? This is, after all, what I was asked to talk about. The pressures on the environment in the United States will almost certainly increase in the future. Even if the present lower birth rates continue, we will still have more people a generation from now than we have today. Even if the rate of economic advance slows down, as it may well do, higher real incomes per capita are highly probable in the future. New forms of technology will surely be developed, some of which will increase environmental pressures, although some may reduce such pressures. I see little probability that increased environmental pressure can be avoided. Indeed the task is to reduce the environmental pressures to offset them as much as practical. The environmental pressures of the future are going to enforce adjustments in both production and consumption. The public in this country seems now to realize in the future every producer cannot be allowed to produce whatever he chooses in any way that he chooses. The environmental consequences would be too great. But we must face up to the fact that every consumer cannot be allowed to consume anything he or she can afford. The environmental consequences here also would be too great. As ordinary citizens we must realize that we, and not merely the large corporations, must accept some restraints on our choices of decisions.

My judgment is that in the long run the scale of the adjustments required for environmental protection would be much greater than anything we have experienced to date. Now this does not in the least mean that every proposal advanced in the name of environmental protection will be effective, wise, or desirable. There is talk in some circles that environmental protection may be all very well, but it's too costly. The nation cannot afford it. My reply is it is supportable because it has to be. Many of the estimates of the costs of environmental measures made by the environmentally concerned people have been far too low in my judgement, just as many of the estimates of the costs made by those seeking to avoid environmental measures have been far too high.

But, to say that we can and must afford what is basically necessary to protect our environment does not endorse every measure proposed in the name of environment, nor does it mean that any particular measure is the best that can be devised. People everywhere in the world must live and sometimes this will mean severe environmental disturbances. The subsistence farmer on a small plot of steep hillside land or a location where forest clearing and abandonment is the typical farming practice may be doing damage to the land. But he also faces the necessity of feeding his family. But the person who decries environmental degradation while buying products at the supermarket which originated from a degraded system of farming may be unaware of the ramifications of his or her action but has not escaped participation in the environmental process.

The task of social engineering in the environmental field is to devise programs that will be both effective and efficient. Programs must be effective in the sense of getting the job done. And, as I have noted, the national air and water quality controls programs and soil conservation programs have been substantially less than completely effective up until now. But programs also must be efficient. That is, they must achieve their results at the lowest possible cost and not create more damage elsewhere. Programs can be effective but inefficient if they achieve their results at too high a cost. They can hardly be efficient unless they are at least moderately effective. Tests of effectiveness and efficiency must be applied over the long pull of course. People live in the here and now so that at least tolerable results are necessary in the short run as well as the long run.

Environmentally concerned people must realize that in the environmental field as elsewhere trade-offs among goods and bads are inescapable. Nothing is costless--there is no such thing as a free lunch. A legislative fiat requiring the attainment of a particular degree of water purity by a specified date considers neither the cost of doing so nor the possible damage to other desired aspects of life. It is now fairly well realized that air, water, and land pollution are interchangeable to a substantial degree. This realization did not always exist. There is also a growing realization that environmental gains in the level of living must be considered in a common framework although some environmentalists still talk as if economic output were no concern of theirs, just as some producers still talk as if environmental facts should not be allowed to interfere with their enterprises. Trade-offs are another form of compromise, and the trick is to gain for yourself what you value more while giving up what you value less.

I want to talk a little bit about the role of educators. This is an education conference, and I am going to stick my neck out by invading your field of knowledge and probably reveal my ignorance; but I want to conclude with a few comments about the role of the educator in environmental protection, of course, as I see it.

First of all, you have your traditional task of informing students about facts and relationships. A better understanding of the physical, biological, and ecological basis of plant and animal life including the role of soil and climate is essential. It has always been essential, and I see no reason to think it will not always be essential. To this must be added knowledge and understanding of the economy, what people do for a living, where and how they live, the role of social institutions and the like. The human or sociological aspects of life are no less important than the biological. All of this, of course, is basic to modern life and all of its aspects, not merely to environmental protection. If people had had this kind of knowledge much of the lost motion in the environmental programs could have been avoided.

But, a mere knowledge of facts and relationships is not enough. Attitudes toward knowledge, toward rational action, toward definition of goals, toward one's fellow man are just as critical. I did take an education minor a long, long time ago; and at that time the dominate attitude among educators, at least that I met, was that the teacher should impart facts but should not try to influence moral values and standards. In practice, of course, the teacher invariably taught moral standards and goals even when he pretended not to do so. A teacher need not go so far as to try to indoctrinate the student with his or her personal standards of values in order to develop some capacity in students for rational self-examination of their role in society. To put it more bluntly, students need not be required to love their fellow man, but they should be taught that they cannot ignore him. Our modern society requires dealing with other persons individually and in the mass.

For my set of value standards it is highly desirable that students acquire high idealism from schools or from home, but they also be tough minded in their analysis of situations, issues, and proposals. I suppose one could easily stir up a futile debate over whether the mushy headed idealist or the cynical self aggrandizer is a more serious threat to society. Much of the environmental movement of the past decade or so has been notably lacking in hard headed analysis, a careful searching and screening of facts and identification of both beneficiaries and cost bearers. If educators could stimulate students to raise questions such as these and to answer them as accurately as possible, environmental protection would be a good bit more effective and efficient than it has been.

Educators might try to make students realize that true environmental protection requires a lot of staying power. There may be a battle to preserve some particular area or to prevent some particular environmental degradation but that battle will never be the last. A great many of the more difficult environmental problems have been decades in development and their solution will not come quickly or easily. Efforts for improvement must continue over many years with some gains at some dates and some losses at others. No victory will be final nor, we hope, will any defeat be final. Avoidance of false and easy optimism is clearly one requisite but not enough. Willingness to remain involved and to exert effort over long periods of time will surely be essential. Those who are concerned with the environment must enlist for the war, not for the battle.

THE EDUCATOR, VALUES, AND THE ENVIRONMENT

Robert Samples

Robert E. Samples, who is a researcher, author, consultant, and lecturer, is currently most involved in writing some books on psychology, early childhood, learning, and love and personality. Mr. Samples is trained in the physical sciences of geology, geophysics, and astronomy.

Hello. I walked over from the Ramada Inn this morning and was reminded again of being a little boy with a small black dog running up and down the shores of the Mississippi when I lived in Burlington. I had almost forgotten how neat Iowa was in the springtime. But, there really is no more appropriate place, I think, to talk about environment and to talk about the values that go with it than in a place that has its soul so close to the earth.

I think that there is kind of a transformation taking place in our culture now and it is a rather exciting one. I had the really good fortune to be involved with a whole variety of educational efforts since the early 1960's. These included working with a science course for elementary school children called, Man: The Course of Study, a social science course; another one called the Elementary Science Study; one called The Earth Science Curriculum Project which was aimed primarily at students in the junior high school years, and I developed during that time some cherished friends, some of which are here right now. And then on to a project entitled, The Environmental Studies for the Urban Youth, and that is where we started spending a lot of time in downtown areas in the large cities of the country. In doing this over that period of years the kind of thing I had a chance to do was to be participant, observer, manipulator, whatever kind of things a teacher turns out to be as they begin to try to involve themselves in education. In doing that kind of a thing I was able to sort of sense firsthand, in a lot of ways, some of the ways that things seem to be changing as we go with them. In doing this kind of a thing I was interested in a whole variety of things; one of which, of course, all the way along the way, was how things changed, how people learned, how people developed, how the earth changed, and how the universe changed.

Only recently I've found there were lots of other people who were thinking things almost exactly at the same time but were in such separated fields that we never got together. I got a book just recently called *Evolution and Consciousness: Human Systems and Transition* edited by Eric Jantsch and Conrad Weddington, two very, very well established people in the sciences. While reading this in the last few weeks and also on the airplane coming out here, I was struck by a notion that there is very definitely a new kind of spirituality that tends to emerge when we're talking about such things as science. Strangely enough, the spirituality seems to be coming from the scientists, people like Jonas Salk, an immunologist, who is now writing books like *Mankind Unfolding, Survival of the Wisest,* and who is starting to literally join a long line of spokespersons for a new kind of quality of knowing. Out of this there are people who are looking at essentially the way we tend to affiliate with each other and affiliate with the world in which we live. Jantsch, in a paragraph in one of the essays in this book, says, "We might ask why humans who possess art make life so difficult for themselves. They know of time, they can foresee, orient themselves toward the future; they can also design the world in which they live. How then can it be explained that by experience this potential is not expressed as joy but expressed as anxiety? Men want certainty, not hope," says Jantsch in a very pessimistic moment. "They cannot bear the uncertainty which is so basic to all life. They're hopeless. They do not develop potential at all but ruin it. We know that a future which is certain is timeless and, therefore, it is one of form. What is it which makes man so hopeless that he experiences hope itself as anxiety and finds security only in death?"

Well, I thought, that's a nice little paragraph to read on a joyful Iowa morning, but the notion being that really there has been a great deal of that kind of vision that has tended to guide education; and that there was always an enterprise underway in which we were sort of trying to patch up the places we had bled the most and keep ourselves, or at least postpone the next injury which was inevitable. I would like to say that I don't share this vision of education at all. I hang around too many teachers who are spokespersons for hope and who, in fact, have as a basic motivating quality within themselves a sense of joy. And just as a person is a value system, so there is no way not to teach values in school, and there is no way not to teach any of these kinds of things as being exposed. Certainly indoctrination is a very different idea. A dear friend of mine who argues with me a lot——he's a politician and tends to feel very strongly in the role of the political action as being something that's important for us to experience——and I have argued about things for a long time. He wants to get organized and get things going that way. And my argument is essentially, well, a person who is very well organized but has no competence to their own soul is not a very good voter. So the sort of thing we have been teasing about is that the most political act that a human being can perform is the transformation of themselves into a context in which they tend to revere those qualities of life that tend to be nuturing and growth oriented, and tend to become the kind of consumer that realizes that they, too, are vital to the equation of growth and consumption. Some of the things I have done to try to worry about this is to see what sorts of changes I tended to see taking place around us in the name of this thing we would glibly call transformation. So I will share a few of these with you now.

Teachers very often ask me how can we get kids to become more compassionate. How can we get kids to care? How can we get kids to develop a sense of goodness within themselves? The answer, I think, is simple. Be the kind of human being you want the kids to experience. All of the words and all the rhetoric that we could put forth that would tend to make us sound vitally noble can simply be the mask for a hollow human. And we are finding that too many people who tend to be spokespersons for higher causes tend not to be those who live within them. This does not necessarily mean bumper stickers, but I happen to live in the bumper sticker capital of the world, the San Francisco Bay area. It seems that everyone has a bumper sticker for something. The other day I saw one that said, "Save a whale today, harpoon a Honda." So whether or not these are the kinds of things we need to guide us forward, I am not sure. But nonetheless, I would say that would be one of the first kinds of things. Before I can develop an ethic of conservation I have to become a conserver, and I have to become a conserver at a variety of levels. I seriously entertain the idea, but unfortunately, I have given up some of these sorts of revolutionary, smart aleck tactics. Not too many of them, but I have given up many of them that I used to exhibit a lot in the past. I was thinking about sending an audio tape cassette out here and say essentially that the best way to conserve is not to fly a person half way across the country to go to a conference on conservation. But I didn't do that, of course, because I wouldn't do things like that.

The sort of thing that I would go along with is that in our own home in California, in a town called Tiberon we're standing there looking at San Francisco Bay, and we are cutting down to thirty-eight gallons of water a day per person in the house. We are wringing out mosquitos for showers and things of this sort, but it really brought back another thing--that the water tends to affect the way we think, as well as the way we drink. It is really strange to see these places, of the awesome amount of money invested in homes and landscaping and so forth, and to realize that behind those carved doors there are a lot of people who are now, for the first time perhaps in a decade, really back in touch with the very fiber of kinds of things that we are all going to have to face eventually. They are really looking at and knowing that everytime they turn on the water, this is something that means something to them. By the way, it is not just the cost, although the cost is notable. However, we found when the Morin County Board of Water Commissioners extended to this awesomely affluent community--it is just really ridiculous, extended this kind of thing--we thought, boy, it's never going to work here. This is really going to be a mess. Well, they cut the water consumption in half for the rationing, and the users cut that by 60 percent. And that was something I could not have predicted. So I'm looking at cues that are subtle as that. All over the country these things are going on.

When I was here in Iowa a few weeks ago and working with some of the education agencies in Cedar Rapids, I was talking with a rancher, a person who has feedlots and raises cattle, and, in the sense of the drought that had hit here this spring after the bitterness of the cold of the winter, and so forth. It brought the kinds of things back to a level of awareness, I think, that they are really part of a life style. Not only is this kind of thing, I think, taking place in our country, but we have also shifted in our context of what constitutes the way people know.

The first person who really worried in the sense of psychology about these things, of course, was Aristotle; but later on one of his disciples, Freud, brought on a vision of how people think and how people tended to be almost as pessimistic. As a matter of fact, I think it is what influenced the paragraph I read to you a few moments ago. The Freudian concept was essentially that there is a great animalistic battle going on in each of us, and that the basic beast is fighting the higher nobler instincts of human kind with each of us; and gradually we come to some sort of equilibrium with that. Working with this concept Freud eventually created the world that the behaviorist could flourish. The sort of thing that happened there was essentially that if this kind of basic division within humans exists then what we can do is to modify the behavior of people and manipulate control of behaviors so they will go toward the directions. We spoke a bit about that this morning in terms of the notion of legislation, of laws, and of controls, and how this tended to deny the capacity for a person to have the choice of will in themselves, and thus to develop the ability to be voluntary conservers, as opposed to behavioral conservers.

Then there was just a very brief period of time that has excited us in our vision of how people learn. That was called cognitive psychology, and it's a modified form of behaviorism. It's supposedly a natural kind of development, but nonetheless, we simply allow education to take place within this. At the same time that Freud began all of this context, humanistic content began with Jung. Humanistic society is essentially a movement toward looking at the entire person in the learning process. Educators are now entertaining this as well as cognitive, behavioristic, and Freudian views. But then, almost just about the time we get used to the humanist, Maslow has just recently departed the scene and yet his words are still primary to many, a transpersonal context side of psychology is emerging. The transpersonal psychology is again reestablishing the human being as an organism within the larger cosmos and putting us all in touch with this.

So, the only reason I am bothered with this paragraph of evolution of psychology is that it essentially shows another parallel context in which we go from a highly specified, isolated type human to one that is more affiliated with and more in touch with and, in fact, more related to the cosmic essence of the universe. Also, we find that the social scientists are seeing some of these same kinds of things as they try to chart out what they feel, the progress of the

historical development of our country has been. Charles Reich, when he did his *Greening of America* quite a while back, testified to this. I think his cue system was a little bit faulty, but nonetheless, I think that the basic message was there. The country has essentially gone through a series of consciousness changes. In the period he called "Consciousness 1," we were dealing with the ethic that essentially came with the first Anglos who developed this country, and it was an ethic essentially rich in exploitation and use, and conservation was only a part of it from the standpoint of family affiliation. Then the industrial revolution brought "Consciousness 2," which brought a technicratic ethic to us. This was definitely an ethic of consumption, one in which consumption was almost perfected to the point of the issues that we face now. Almost perfected destruction. Then beyond that particular point there seems to be an emerging ethic right now that allows conferences like this to exist. Because, otherwise, if people weren't concerned about these kinds of things, they wouldn't fill up auditoriums like this and go listen to people talk. Your very presence is essentially a statement toward "Consciousness 3," the notion where consumption and compassion must be brought into equilibrium. The notion that we do use and we will continue to use and the technocracy will not go away. General Motors will not quit. So these kinds of things are going to continue. And the wisdom with which we can greet this is going to come from this development.

Of course, there are other levels of consciousness that go beyond this, a whole variety of things. Even in neuropathy we are finding that a more wholestic context of the way that human beings operate cerebrally is beginning to emerge. Many of you, perhaps, have been privy to the ideas about hemispherity. Left cerebral hemisphere in most of the people in this room tends to do the logical, rational linear functions and sequential time ordering ways of thinking that we know. So when we ever get rational we get left headed. With the right cerebral hemisphere, on the other hand no pun intended, we are dealing with a wholistic, more metaphoric, and more gestalt kind of knowing.

One of the great points that comes out of here by Eric Jantsch is that, essentially, science has provided us mostly with a kind of logical format way of knowing there has never been a gestalt in the sense that what science does have effectively destroyed gestalts. I think this is an interesting, but not necessarily a complete way of looking at it because, again, as I indicated at the outset of this presentation, I am becoming more and more convinced that science is becoming a new kind of spirituality. There is an awesomely important book that has just been written by a person named Fritjof Copra, and it is called *Tao of Physics.* And, though I am pronouncing it "Dow," it is spelled T-A-O. In this book Copra points out the qualities, the mosaic qualities of affirmation of subatomic particles, and he goes so much farther than Heisenberg did in developing what we call the uncertainty principle that the final outcome of the book is very simple. There is no objective content area, and the source of inspiration for learning. So strangely enough, science has almost come closed upon itself again. It's providing us with the most useful mechanism by which we can again reinstate ourselves and reaffiliate with natural systems. I am saying science, and I hope that you'll understand that I am using this as a methaphor. I am not being specifically spokesperson for these things that are only called science, but I am simply saying that these are the areas that take us to the earth rather than away from it as many of the other subjects do, studies of human history and so forth. Almost all of these take us away from the earth.

So, the primary move, then, is toward an ethic of compassion rather than one of consumption. And learning and education we're beginning to find takes place at levels that we ordinarily don't think much about. If we believed the aerothinking of Piaget, one of the kinds of things that we see is that people go through a series of developmental stages toward becoming smart. I guess that's as clean a word as I can use. It is the notion that when human beings begin to think logically about things they have not experienced, they are at a high level of development, according to Piaget, that is called the formal operation stage. I have a slide of this, but I unfortunately didn't make arrangements to be able to show these, so here is a chart that talks about development of learning, too. So let me read to you from the lower parts of this chart since I can't project it.

There is a level of learning that Jung calls spiritual learning, which goes to functional learning, then to conscious, then to super conscious, and then finally to transconscious learning. The virtual learning is literally the kind of learning that takes place in the ecological context of the sperm and the egg, and there is a capacity to be able to demonstrate that there is a kind of learning that takes place in very, very simple systems; and of course, there's nothing simple about a sperm and an egg. We ordinarily don't think of all this as being a level of educational involvement at all. Then there is a long period of time in the virtual, or fetal learning, and there is an awesome amount of learning that takes place in the fetal period. Finally, into the first eighteen to twenty-four months of life most of the learning that human beings achieve during their entire lifetime takes place during those periods. Then, finally, we go up to a very highly reductive and a specified kind of knowing which ordinarily is the stuff we experience in school. Moving beyond this, the point at which the knowing and the learning that what the person has experienced becomes part of an ethic, part of the way of expressing themselves, and a part of their way of acting upon the world in which they live. This progression, by the way, continues into the super consciousness of knowing, and so forth, but since I obviously am not a super conscious knower, I can't explain it to you. It isn't in my realm yet, and I am still struggling with formal operation levels. But nonetheless, it is essentially the kind of thing that says the ethic of competence and the ethic of compassion is the in-product of the educational process.

So these are kinds of things that I think are worth thinking about as we approach such things as conservation and as we approach such things as life. Human kind is here, and human kind has the capacity to celebrate or to wither. We can go with the words of Pascal and "think about the notion that what we do is create contexts of despair. But we also have the capacity to create contexts of joy." And I certainly feel as though efforts like this are moving us far more toward a context of joy and a context of celebration than one of manipulation and coercion.

Thank you very much.

THE ISSUES AND OUR FUTURE

Charles Wright

Charles Wright is at the present time serving as acting regional administrator for Region 7 of the Environmental Protection Agency.

With the two previous inspiring presentations I feel a little like the politician who had a bit of an argument with a speech writer in asking him to write his last speech before he fired him. As he got up before the audience he said, "Ladies and gentlemen, we have crime on the streets, serious environmental pollution, our strategic balance is in jeopardy, and the economy shaky, but I have the answer, and I am going to tell you what it is." And then he turned over, and right there in the middle was, "I quit. You're on your own." I don't claim to have the answers; but I am going to try to present how the Environmental Protection Agency, and in particular, Region 7, working out of this four-state area, looks at it. It is a pleasure to represent our administrator, Douglas Costle, at this meeting. Doug was invited and asked me to represent him, and I am representing EPA in that content. The topic, "Issues and Our Future," is one with which the agency management is currently very preoccupied. Although we are a young agency we have matured quite rapidly, and recent legislation passed last October-November seems to have provided the much needed authorities for our comprehensive approach to most of our serious environmental problems. Although EPA and the environmental programs are much criticized, there still seems to be a solid base of public support and, of course, a base in Congress, fortunately, for the environmental programs. EPA has always enjoyed strong support from the office of the President. We expect both support and leadership from President Carter. His environmental message, which is scheduled for delivery within the next couple weeks, is expected to be a very strong one. He has appointed an experienced environmental administrator, Douglas Costle, who was formerly a state environmental administrator, to manage the Environmental Protection Agency. Costle is known to be an advocate of a tough but fair enforcement. He has also stated that the agency's work is going to be marked by balance and judgment, scrupulous credibility, and thorough assessment.

Two groups that are highly sensitive to the popular dichotomy imposed on the environmental issues of today and representing opposite poles of the spectrum--the National Wildlife Federation and the National Association of Manufacturers--were addressed by Mr. Costle on the same day. This was his first formal message, and in a sense, it represents the statement of policy and direction for the federal environmental programs under his administration. Much of what I say today will represent what Mr. Costle has stated in the national policy, and then part of this will represent how we in Region 7 view our approach to implementing the policy set in Washington. And we do have a fair amount of decentralization and flexibility within the Environmental Protection Agency that many other federal agencies don't have.

The issues in the future for conservation and environmental protection is more than just a buzz word now. This is a critical time for such programs. We're seeing increasing anxieties resulting from the regulatory programs and controls that are imposed by federal and state statutes. Fears that such controls will cost jobs and undermine the economy are understandable, but they are unfounded. There are probably far more jobs created than there have been lost through these types of programs. But the blunt truth is that if we don't do something now to put our environmental house in order, it's inevitably going to be a miserable habitation. The issues of jobs or economic growth will become academic. I think that one problem is that in the seven years since the Environmental Protection Agency was established, we may have been so involved in specific issues with which we are constantly embroiled and will be in this type of program, that we forget the fundamental premises on which the environmental mission was based seven years ago. So just for a moment let's just withdraw from the embattled terrain of sewage treatment, catalyic converters, emission standards, and so on, and rise like the astronauts to see again the vision of spaceship earth that's floating silently in a thin and fragile envelope of its atmosphere.

From this perspective the finite nature of the world is very clear. It's a self-contained capsule of earth, air, and water; of homes, highways, and factories; fuel, energy, waste and finite mineral resources; of interdependent human, animal and vegetable life. In this capsule a growing world population plays out a continuing drama of ambition and expectation and achievement, often with little regard for the long-range consequences. Each year the population of the world grows by an estimated 70 million people. And this growth is accompanied by a vigorous and necessary growth in factories, in power plants, and in the production to sustain food and fiber. But the growth in the population in industrial production faces two potential self-limiting barriers. First, there is the creation and discharge of toxic substances, and this has been called a silent epidemic. It is an insidious attack on all life, vegetable, human and so on. The effects may be delayed for fifteen, twenty, or even fifty years, but the human and economic cost can ultimately be insupportable and prohibitive. Second, there is a potential for exhaustion of finite natural resources which, unless we learn to conserve, substitute, and replace, is going to seriously disrupt our own and other economics. To worry then that pollution control is going to be the inhibitive drag on the economy is to miss the point entirely. For even if we were to achieve no more than current levels of industrial activity, that amount of pollution if unchecked would soon be totally unacceptable.

However, I strongly believe that our environmental concerns are totally compatible with the economic necessities. According to a report done in December of 1975 by the President's Council on Environmental Quality, a million people are now employed as a result of environmental expenditures. According to another study that was done for EPA and CEQ last year, the unemployment rate for 1977 is about a half a percentage point less than it would have been without the environmental programs and the expenditures that they are responsible for. Available evidence, and these are done by Chase Econometrics, Hale-Smith, other think tanks, show that environmental protection laws have had a minimal impact on the gross national product and the consumer price index; and they have not required a disproportionate share of capital spending.

It's becoming increasingly clear that the effects of pollution seem to be even more dangerous and widespread than was realized when the EPA was formed. Because of advances in medical technology, pharmacology, and immuniology over the past half century, the infectious diseases are waning, at least in our country. In many cases they have nearly disappeared. As the current measles epidemic in our country down around Kansas City shows, they do recur. At the same time, though, we are experiencing an increase in cancer and heart disease, and these are emerging as the leading cause of death. Increasing in all industrialized society are most of the serious diseases, cancer and so on, which have emerged as exposure to environmental hazards and to our personal habits. In the United States alone the national bill for health care has reached over 140 billion dollars a year. And most of these go for after the facts of attempts to cure, and it would be far more health effective and far more cost effective if these were placed on prevention and on behavioral change and on environmental protection.

Since the passage of the Clear Air Act of 1970 and the Clean Water Act of 1972 there have been some significant improvements in quality of the environment. Sulphur oxides are down in the major cities by about 30 percent in that length of time, and we have seen a decrease of about 4 percent per year in decline, in particular, to emissions in our major centers. We have improved our aquatic environments; fish are returning to many streams and lakes. But more importantly, many toxic and hazardous substances are being removed from our aquatic environments. There are other substances that are, however, posing even deadlier threats to our national health than those that were the bases and the original targets for our environmental legislation.

The World Health Organization has estimated from 60 to 90 percent of all cancer is a direct result of environmental factors. The National Cancer Institute published a report in our paper today that much higher rates of cancer exist in the heavy industrial areas. Then within the last two years the rate of cancer deaths has increased more sharply than at any time in the last twenty-five years. The National Cancer Society estimates that approximately one out of every four Americans will develop some form of cancer. Each year we produce some thirty thousand chemical compounds in commercial production, and about a thousand new ones are introduced each year. We have had over the last few years increasing evidence that the effects of these substances are not good for our health and the health of those who work in the industries or who use these. We know that mercury, lead, and cadmium can attack the central nervous system. We know that carbon tetrachloride and chlorinated phenols can damage the liver, and that ethyleneglycol and cadmium sulphate can produce kidney disease. Abestos and berlium can cause lung disorders; but we now know that polyfinalchloride, that has been in commercial use for over forty years, can cause cancer. We've only recently discovered that fluorocarbons can damage the protective shield of the ozone layer, and so on, and so on.

The evidence has had effect, however. After five years of active discussion and debate in the halls of Congress, the Congress passed the toxic substances control last year. This act will round out the necessary legislative authority that's required to regulate the introduction and the control of toxic materials in our environment and not after it enters the environment. It's going to be a very difficult regulatory task. The fact that evidence exists that a particular chemical may cause harm is not in and of itself sufficient to warrant a total ban. In the complex technological society that we exist in today, judgments on risks and benefits are going to have to be made, but made very carefully. It is essential that the EPA approach this regulatory task with objectivity and openness, with scrupulous regard for the facts, and with full public participation.

In addition to the protection of public health, we are also concerned with the conservation of resources. The resources on which we depend, the essential minerals, the metals, the energy from fossil fuels, are finite, ultimately nonrenewable. And yet, we consume and we throw away these materials as though they are unlimited. In our hearts we know that our throwaway habit cannot be sustained, yet we still do it. Taken together, our automobiles, our industrial plants, and our own personal life style are from two to three times less energy efficient than are those of the other industrialized nations. In his energy message last week, President Carter placed major priority on energy conservation. That is, of course, what environmentalists have long urged, and I am glad to see this administration give it the priority it deserves. It's the cheapest source of energy and raw materials that we can possibly find, and the philosophy of conservation is the only one by which we are going to preserve our wetlands and our forests and our other natural resources.

I think the public is supporting President Carter, although we are getting a considerable amount of disagreement among Congress and others. I believe the public is solidly behind him. But we, too, in Kansas City, had an experience last winter during the gas crisis that was heartening. Late one evening there was an announcement on television and the radio that the greater Kansas City area was in imminent danger of having such a reduction in the gas supply in the pipelines that they would not be able to supply homes, let alone the traditional cutoffs of industry, large buildings, and so on. The reaction to this was immediate and it was beyond anybody's wildest hopes. By noon the next day there was a sufficient reduction in the overall gas usage in greater Kansas City that nobody was cut off.

The passage last year of the Resource Recovery and Conservation Act of 1976 gives EPA an opportunity to encourage the development of resource recovery technologies and conservation that should help to solve the growing problems of solid waste by using this resource to create energy and to increase our store of reuseable materials. We have identified about sixty major metropolitan areas where energy and materials recovery is economically feasible. The implication of programs in these areas alone could result in the recycling of sixty-six million tons of waste a year, more than half of the entire waste stream in the United States.

Let me just give you one example of what the potential impact of resource recovery to us. There is a bottle-can bill in the state of Iowa. Many other states have passed these. If all of the soft drinks and beer containers were returned and refilled at a 90 percent rate, the reduction in energy use would approximate 194 trillion BTU's, or the equivalent of about ninety-two thousand barrels of oil a day. There are many avenues of resource conservation that equally would save similar vital energy in metals resources in particular.

The current environmental era can be said to have begun with the enactment of the National Environmental Protection Act of January 1, 1970. This is the infamous NEPA, depending on what side you are on. Over the seven years since then there has been a lot of law put on the books. We do need some additional legislation. One good example, we need an effective strip mine bill; nevertheless, with the toxic substances and the resource recovery bills added to the charter for the environmental programs, I believe that we have largely rounded out a set of basic authorities that are needed to control pollution.

Pollution, resources recovery, drinking water, noise control, radiation pesticides, and toxic wastes are all now in our bag. They do represent a very comprehensive set, but a thicket almost in the regulatory authority which perhaps has caused the public to lose sight of the forest for the trees. I suggest that it is now time for us to begin analyzing and reviewing and improving and learning to administer effectively the laws that we already have on the books. We have important decisions to make regarding such issues as automobiles, coal, the control of toxic substances and more. And we need to get at these. The issues are worthy of our most careful research and our most reasoned judgment with an emphasis on education. We know we will not please all of our constituencies all of the time, but we will maintain the integrity of our mission and share discussion and decision making as broadly as possible without sacrificing the capacity to make decisive action, if possible.

A central concern is a proper balance between national, as compared to regional and state and local, leadership and direction for the effective implementation of our environmental programs. Congress has perceived the imperativeness for a national environmental policy, but it also understands, as demonstrated by the preamble to almost every piece of environmental legislation, that there is a diverse regional environment within this nation that requires a measure of regional and state flexibility. The experience of the past winter has underscored this necessity. With shifting patterns of precipitation and drought, and with unseasonable cold and heat, the states in the region are just going to have to have flexibility to speak to their own problems with assistance and no dictation from the federal government.

As a regional administrator for EPA, I cherish both the freedom to plan locally and the ability to draw the strength that we have from the national presence. With one third of EPA personnel in Washington, one third out in the field, and one third in laboratories and training institutions, we are truly a decentralized agency. This does bring difficulties along with the advantages, however. We work to enlarge and to improve the strengths that are inherent in this relationship, and particularly to work as a team with the state and local governments and with the institutions of higher learning. One consequence of these realities which national environmental leaders must recognize is that many of the problems are going to have to be addressed through efforts other than federal regulatory enforcement. The environmental movement cannot rely on the basic tool of federal regulation entirely to meet its many future needs.

Other tools are needed, and in particular, there is no substitute for the slow spade work of public education. The local public is going to have to be persuaded that environmental safeguards truly serve the public interest in their own home towns and in their own neighborhoods. Environmental advocates are going to have to be more practical in their analysis of alternate methods to get the job done and more imaginative in devising supportive federal roles. Financial aid, especially as incentives, should be provided to support sound environmental practices; and federal expertise can also help provide a technical assistance and educational materials. And these are available.

As Dr. Clawson noted earlier, during the last decade the federal programs have shifted towards a wholesale reliance on federal regulation and very strong enforcement. Environmental advocates have sometimes felt that progress is directly proportional to the degree of federal muscle that's employed. This is not always the case, particularly as we face the new needs of the future; the alternatives to regulation are more critical for us. More selective uses of the tool of federal regulation is needed. Avoiding the tool in inappropriate cases should strengthen public recognition of the essential importance of federal regulation to those cases where it is appropriate.

In particular, in dealing with air and water pollution from major industrial plants, the fundamental necessity for strong federal regulation cannot be persuasively disputed. These regulatory programs should not be disparaged solely because they are complex because realities are complex, especially in the world that we know, and we do want to preserve at least the good parts of it. Regulation of pollution from big industrial plants is bound to require extremely lengthy and detailed requirements that simply reflect the complexity of the technology that we're regulating. In short, we're going to have to be more thoughtful in our use of regulation and utilize the alternative such as education. In closing, I would like to give you what I believe were expressed in Mr. Costle's maiden speeches as the priorities for this agency.

First, that EPA will be persistent and consistent in carrying out our environmental laws.

Second, we will be thorough, and we will be fair, and we will vigorously pursue our mandate to protect the integrity and the health of the biosphere upon which all human life, growth, and activity depend. So thoroughness, foresight, and fairness are the words.

Years before the first astronauts viewed earth outside its limits, an American statesman expressed with vivid insight the delicate nature of our place in the universe. Adlai Stevenson said, "We travel together, passengers on a little spaceship, dependent upon its vulnerable reserve of air and soil, all committed for our safety to its security and peace, preserved from annihilation by the care and work, and yes I will say, the love that we give our fragile craft." Now this is our challenge. We need your help and we ask your understanding, and we pledge that we'll work to deserve your confidence. I thank you very much.

IOWA AT THE CROSSROADS

Honorable Robert Lounsberry

The Honorable Robert Lounsberry was born and was educated in Iowa. He served nineteen consecutive years as board member in the Iowa public school system. He was chairman of the Story County Board of Education for two years. He served as director of the Iowa Association of School Boards representing twelve counties in central Iowa for seven years. He served two full terms on the Des Moines Area Community Board of Directors, and he served two years as president of his local PTA. In addition, he was appointed Secretary of Agriculture on April 7, 1969, was elected Secretary of Agriculture November 7, 1972, began his official duties on January 2, 1973, and was re-elected November 5, 1974, for a four year term. He is past president of the Mid America International Ag-Trade Council and is president of the Midwest Association of State Departments of Agriculture.

I was privileged to visit for a short time in some of the workshops and small groups discussions. I thought it was very good. I think so many times that this is really the best thrust of a conference of this type when we can break up into smaller groups and have workshops and discussion.

You know, Iowa really is at the crossroads. We sit here in the heart of the greatest agricultural production area in the world. Right smack dab in the middle of it. And in this State of Iowa we do have 25 percent of all the nation's grade A soil within our boundaries. We are approaching some of the problems of environment, pollution, and I might say that in the past ten years people in this nation have developed an entire new vocabulary--ecosystems, territorial integrity, bionomics, biotypes, you name it. It brings to mind that many of the younger generation feel that pollution is a new peril to man. I would remind you that it is not. It has always been present and the hazards of contamination that develop with pollution have been a peril to man since his beginning. The problem is that now there is a lot more of us living on this planet earth.

I am going to introduce each member of the panel and ask that member for a presentation, and after we complete the presentation, then hopefully we will have some time for good active discussion on some of the subject matter that these gentlemen will present to you. I just want to make this one observation before I introduce the first member of the panel. If those full color photographs on earth that were taken by the astronauts in space had no other purpose, they certainly should give added meaning and knowledge to our view of this planet that we live in.

AIR

Bryce Harthoorn

Bryce Harthoorn is presently responsible for the environmental activities at John Deere Waterloo Tractor Works.

Whenever one attempts to discuss both the governmental and industrial side of a topic such as air quality you can be assured that the presentation is either being made by a turncoat or by someone who doesn't know what he's talking about. In my case, the first has been clearly outlined in the introduction. Hopefully, the latter will not be so apparent. In presentations on the environment there is a natural tendency to jump into the problems. Rather than do this I would like to look at the overall picture of air quality in Iowa. To do this I would like to show you a series of slides of selected monitoring stations in the State of Iowa. This data has been compiled by the Iowa Department of Environmental Quality from various city, state, and federal air monitoring stations. The data that has been selected is composed of maximum twenty-four hour and maximum one hour readings that have been recorded during the past five years. The maximums were selected because they are the highest readings recorded, and consequently have a possibility of impacting public health to the greatest extent.

The first slide is for suspended particulates. Twenty-four hour primary standard for particulates is 260 micrograms per cubic meter. The asterisks have been inserted to label data which does not meet the frequency requirements for annual statistics. In other words the data with asterisks is less reliable.

Suspended Particulates ($\mu g/m^3$)

24 Hour Maximum

City	1972	1973	1974	1975	1976
Cedar Rapids	253	102*	278	162	337
Davenport	340	156*	228	207	264
Des Moines	299	479	540	242	446
Mason City	598	882	430	348	434
Waterloo	354*	421	174	232	147*

Primary Standard = 260

As you can readily see, the primary standard has been exceeded numerous times at numerous stations. There's also a downward trend between 1972 and 1975 with a sharp increase in the 1976 data. You can see that 253 to 162, 340, 207, 299, 252, and I think you can see the increases. The reason for the sharp increase in 1976 is not apparent. However, since industrial, commercial, and urban activities did not see any dramatic changes, the unusually dry weather during 1976 would appear to be the major cause for this increase.

Sulfur Dioxide ($\mu g/m^3$)

24 Hour Maximum

City	1973	1974	1975	1976
Cedar Rapids		232	230	390
Davenport		149	183	222
Des Moines	57	54	33	116
Mason City	109	362	622	157
Waterloo	79	93	31	12

Primary Standard = 365

This chart shows the twenty-four hour maximum concentrations for sulphur dioxide. Primary ambient air quality standards for sulphur dioxide is 365 micrograms per cubic meter. This slide shows most stations to have better air quality in the primary standard with four of the five stations showing some increase over the four year period.

Nitrogen Dioxide ($\mu g/m^3$)

24 Hour Maximum

City	1973	1974	1975	1976
Cedar Rapids		34*	71*	
Council Bluffs	50	85	42	104
Des Moines	133*	106	70	80
Dubuque		55	62	80

No comparable 24 hour standard.
Primary and Secondary Arithmetic Mean = 100 ug/m^3

This chart shows the twenty-four hour maximum concentrations for nitrogen dioxide. There is no comparable twenty-four hour primary or secondary ambient air quality standard for nitrogen dioxide. However, the maximum concentrations can again give us some indication of trends. For nitrogen dioxide it appears that we're holding steady with ambient concentrations well below levels where public health effects would be observed.

Ozone ($\mu g/m^3$)

1 Hour Maximum

City	1972	1973	1974	1975	1976
Cedar Rapids			200*	130*	
Des Moines	160*	110*	160	198	204

Primary and Secondary Standard = 160

This chart shows the one hour maximum concentrations for ozone. The primary and secondary one hour maximum ambient air quality standard for ozone is 160 micrograms per cubic meter. In Iowa only two ozone monitors were located prior to 1975. Here I would say that the data is inadequate for statewide generalizations with Des Moines showing some indication of increasing concentrations. During 1975 the 160 micrograms per cubic meters standard was actually exceeded twenty-two times at the station on the north side of Des Moines.

Carbon Monoxide (ppm)

1 Hour Maximum

City	1973	1974	1975	1976
Cedar Rapids	10*	20*	18	20
Des Moines	24*	29	30	26

Primary and Secondary Standard = 35

This chart shows the maximum one hour concentrations for carbon monoxide in parts per million. The one hour maximum primary and secondary ambient air quality standard for carbon monoxide is twenty-five parts per million. For carbon monoxide again the monitoring data is inadequate for making statewide generalizations. One can see that the air quality is better than the one hour standard. However, this does not show the entire picture since the eight hour standard during this period was exceeded thirty to sixty times in Des Moines.

For hydrocarbons only Cedar Rapids has collected data for more than two years. Concentrations measured in Cedar Rapids have been higher than the guidelines suggested by the Environmental Protection Agency. The technical problems associated with monitoring hydrocarbons and the concentrations of concern definitely cast a shadow of doubt on the reliability of the reported data. From these charts one can see that Iowa does have some ambient air quality excesses. Many states, however, would be happy for the air quality that we enjoy.

Now, I would like to discuss some of the problems and remedies that seem reasonable to a Hudson, Iowa, resident who went through eight years of the one room school house. The first and most widespread problem with air quality in Iowa is particulates. Particulates are small wind blown particles. These particles are lumped into what we call smoke and dust. Particulates can come from natural and manmade sources. The manmade sources, obviously, include fuel combustion for heat, power, and industrial processing. They also include dust from gravel roads, farm fields, dusty urban streets, and fugitive emissions from grain hauling, quarry operations, and industrial ventilation. It also includes open burning of vegetable matter and solid waste. The test method used to compare air quality with the national primary and secondary air quality standard is simply a calibrated vacuum sweeper with a fiberglass filter. It will collect particulates from any or all of the natural and manmade sources mentioned above. Some of the particulates are small and respirable and others are large and seldom reach the human lung.

Many of Iowa's particulate problem is attributed to natural background. Natural background includes all sources of particulates in remote areas where man's influence is minimal. In Iowa it is very difficult to find a place where some industrial, agricultural operation or residential use does not exert some influence on the air quality. Some areas of low population density have been selected in Iowa for background monitoring stations. These include Olin in Jones County, Tallyrand in Keokuk County, Webster City in Hamilton County, and Holstein in Ida County.

The next chart shows the result from the monitoring in these areas. It is quite evident that Iowa is going to have big problems meeting the 60 micrograms per cubic meter secondary standard if our background stations routinely exceed the standard with little or any influence of industrial or urban activities. It therefore seems evident to me that we really only have two choices. One, we can continue to pursue the present standard with little hope of achieving our goal; or two, we can urge reevaluation of the standard and its test procedure. The first alternative will be painful, extremely costly, and could involve everything from tighter controls on industry to restriction on cultivation of farms. One should not be pessimistic. However, I suspect all of these might not be enough to consistently achieve a secondary standard in Iowa.

Suspended Particulates ($\mu g/m^3$)

Annual Geometric Mean

City	1972	1973	1974	1975	1976
Olin	92*	79	64	74	82
Holstein		70	73	39	36
Talleyrand		46	68	47	55
Webster City		64	58	48	

Primary Annual Standard = 75
Secondary Annual Standard = 60

The second alternative, reevaluation of the standard and its text procedure, appears more rational to me. The standard should be based on respirable particulates, not on anything that a vacuum sweeper can pull under a rain cover. Much of our wind blown dust is a relatively large particle size. While these large particulates can be a nuisance they do not create a public health problem. The Department of Environmental Quality did some particle size analyses for their Des Moines leaf burning study. More of this type of monitoring with the development of corresponding ambient standards would enable us to address the public health problems and avoid exercises in attempting to achieve the unachievable in Iowa. My comments should not be construed to mean that control of large particulates should not be pursued. I would rather caution those responsible for developing air quality maintenance plans for our metropolitan areas to look at the total particulate problem before applying tighter and more restrictive emission limitations on Iowa's industries.

In the past the general assumption has been that the industrial contribution is a controllable faction of our urban particulate problem. While I accept the fact that Iowa's industry has created some localized excesses, Iowa's industry has in the last five years certainly reduced the lion's share of their problem. Unfortunately, future industrial efforts will not be nearly as productive as the efforts for the past five years. Today, most of the heavier emission sources have controls which routinely reduce the emissions from 80 to as much as 99 percent. To add further controls to these sources extremely large expenditures will be required to show even minor reductions in ambient air quality levels. To make any significant progress toward meeting the present standard in urban areas, Iowa will have to look at other means of control such as paving streets and parking lots, street sweeping, open buring bans, and conservation practices by agriculture.

The past winter certainly points out the need for the latter. On October 15, 1976, forty-seven of the fifty-two monitoring stations in Iowa exceeded the 260 microgram per cubic meter primary particulate standard. The conditions on that date were dry, with unusually high winds. These conditions resulted in severe wind erosion. Wind erosion such as occurred this winter is a tremendous loss to this and future generations. It not only dumped piles of valuable soil in our road ditches and on our lawns, it also replaced one of Iowa's beautiful winter scenes in northeast Iowa with mud coated snow drifts. Iowa's soil is one of the world's most precious resources. It should and must be protected. Iowa's farmers should be encouraged to use farming practices which minimize the chances for wind erosion and high particulate cencentrations. While no one would suggest that the high particulate readings of last winter were solely attributable to agriculture erosion, one can be assured that a substantial number of the monitoring stations were directly influenced.

The Iowa farmers should take notice of this data because the Iowa farmer is today where industry was twenty or thirty years ago. Had industry been able to affectively address the job of air pollution control we would not have most of the present environmental laws and rules. Farmers have the opportunity to avoid many future problems by taking big steps to minimize wind and water erosion. The tools for mandatory enforcement are already available at the federal level in the Clean Air Act and Section 208 of the Water Pollution Control Act. It is my hope that the Iowa farmer will take the initiative and avoid the complicated problems associated with mandatory state and federal programs.

WATER

Dr. Stanley Grant

Dr. Stanley Grant is Director of the Iowa Geological Survey. He was Governor Ray's representative to the National Governor's Council on Science and Technology at the Midwestern Governor's Conference on Energy Task Force.

For many years we have considered our greatest resource in Iowa to be her great soil. The rich land feeds much of America and the world, and as Mr. Lounsberry has pointed out, 25 percent of the best agriculture land in this country is right here in Iowa. From the humanistic standpoint we have heard it said that Iowa's greatest resource is her people, the stalwart, individualistic, hard working, dedicated, rural oriented citizens who believe in the land, in their creator, and in the brotherhood of man. Iowa has been richly blessed in both categories. But one thing should be clearly understood. Without bountiful supplies of high quality water, our rich soil would not be very productive, our people would be much more urban oriented, and our industrial development and life styles would be quite different.

To support our Iowa life style and agriculture productivity, both ground water and surface water resources must be adequate to abundant in quantity and of good quality for all of the uses we apply to it. We have to have enough to drink and enough to water our animals. We need enough for adequate vegetation, for industry, for recreation, for irrigation, if needed, and for the other demands that we place upon it. In Iowa we have a basic confidence in Mother Nature that sufficient rains, snow, sleet, and hail will fall on our land, will fall on our water supply, and recharge areas outside of Iowa so that our rivers will run near full, our lakes will stand high, our ponds will be brimming, and our aquifers will produce abundantly.

We recognize that some parts of our state have much less water than others. The northwestern part of Iowa is generally the driest; that part has less precipitation than the rest of the state. The southwestern part of Iowa has very little good quality ground water and most of the available water comes from the streams, the storage ponds, and the sands and gravels from the stream valleys. Few deep wells produce very much water of any kind, and most of that is of poor quality.

Elsewhere we have tremendous water supplies. The Missouri flood plain has an excellent supply of water available from hundreds of wells generally less than 120 feet deep. Areas adjacent to the Mississippi River, the Big Sioux, and the lower end of the Des Moines River have good supplies of water. The Flood Plain of the Cedar River from the Minnesota border to about Cedar Rapids has a lot of good water available; and even in the shallow bedrock aquifer, the Cedar Valley Limestone, generally we find great supplies of excellent quality water. Several other limestone and sandstone formations produce plenty of good water in parts of Iowa, especially in the east and northcentral areas. These formations were badly broken by the massive weight of glacial ice and fractured or jointed by natural processes before the glaciers moved into or across Iowa. These broken areas generally contain plentiful supplies of water. There are numerous more localized areas of Iowa where the limerocks have been dissolved and sinkholes, caverns, and connected open spaces abound. These dissolved limestone areas are referred to in geology as karst areas. Such areas frequently contain quantities of water which may be of good quality or highly polluted by septic waste, barnyard runoff, fertilizers, pesticides, or industrial waste. These karst areas are abundant in northeastern Iowa. They are a source of potentially serious water quality problems. The major sources of water from our deeper aquifers in Iowa include the Mount Simon formation at the eastern edge of the state which is an aquifer more than five hundred million years old. The water that is pumped from this aquifer is several thousands of years old. That is to say that the water was precipitated on the surface several thousand years ago and gradually migrated into the aquifer from the recharged areas or downward through fractures or structural breaks in the earth's crust known as faults.

Water moves through an aquifer very slowly as a general rule. Only when the rock formation is badly broken and the openings are connected can water flow quickly through the formation. In a typical sandstone several hundred feet below the surface the water moves naturally only a few inches to a few feet per year. High volume pumping can then deplete the available water supply quite quickly. If the water is mined, that is to say the water is pumped out more rapidly than it can flow back in through the natural flow process, the aquifer may lose its ability to hold water. Sometimes when the water is removed the sand may shift and reduce the amount of spaces between the grains of sand and so much less water can get back into the aquifer. When water is pumped from an aquifer faster than water can flow through the aquifer naturally a cone or depression is developed around the well. Continued overpumping may cause the cone or depression to reach many miles horizontally and from a few tens to several hundred feet in depth. Such a cone may adversely affect a lot of other wells in the area.

Other aquifers of significance in Iowa include the Jordan Sandstone which is one of our better subsurface water supplies in much of the state, the St. Peter Sandstone in northeast Iowa, the Solarium Sandstones in eastern Iowa, the Cedar Valley Limestone that I mentioned earlier, some rocks of Mississippian age over central and southern areas, the Dakota Sandstone in the northwestern part of the state, and locally, of course, there are many others.

But the important fact here is that we do not have unlimited supplies of water that can be pumped from the deeper aquifers and not all of the water that can be pumped is good to drink. Most of the water from deeper wells in southwestern Iowa is not fit at all for human consumption. Extreme northwest Iowa, the Sibley area, has very poor quality water. These areas have naturally poor quality water; other areas of the state contribute to poor water quality by surface pollution.

In the last few years the demand for irrigation has been a sharp upswing in Iowa. The drought conditions have stimulated a heavy interest over the last two or three years. Even though we have recorded drought periods every twenty-two or so years since around 1800, the technology and farm economy of today makes irrigation a very real alternative and a viable option in some places in this state. But many people fail to realize that there are parts of Iowa that will not produce enough water for irrigation, no matter what system is used. Some of the soils in Iowa do not benefit significantly from irrigation in the first place. There are those places which with irrigation produces abundant crops. The Missouri River Flats or Flood Plain is a prime example and the area around Muscatine is another. A few of the internal stream valleys also have a limited ability to support irrigation on soils which can be benefited by mechanical addition of water. Certainly the yield of crops can be improved by the timely application of water during certain periods of the crop year, not necessarily just during the growing season.

One of the problems with irrigation is that it demands large amounts of water over a short time period. There are large parts of the state that just do not have that kind of water available for everyone who might want it. There may be enough for scattered irrigation but when a high percentage of the farmers seek to irrigate in the same area we see very real problems except in those special areas such as the Missouri River bottom lands. Some irrigation permits call for two thousand gallons of water per minute to be pumped from wells or even more in some cases. There are several such wells presently established but most of our aquifers will not produce that quantity of water over longer periods, and that means only several days, in this terminology, without some influence on other wells or in some cases even on streams; it starts to pump the water back to the wells from the stream.

It's difficult to make generalized statements here because hydrology is a very complex subject and each case is different from every other one in some perimeters. We do have high volume wells that produce without adverse impact, but we have others that when they are produced at capacity do produce problems locally. We have many places where we just do not have enough water available to establish a high volume well in the first place.

In Iowa we have been making water studies for many years. We are getting to know a lot about the water supply in parts of the state. Sadly, however, some areas have not been studied very much. Where we have limited information it is extremely difficult to properly predict the influence of extensive high volume water withdrawals. The solution is to get studies underway in these areas.

The Iowa Geological Survey began last year a comprehensive water resources evaluation of northwestern Iowa. That study will be under full steam this summer and should continue for three to five years. It is a study that should have been accomplished many, many years ago. But as the saying goes you cannot do everything, everywhere at the same time.

Surface water supplies also need to be mentioned. The rivers, the lakes, the ponds, the streams of Iowa have been measured, studied, modified, used and misused for a long time. Not all of our surface waters have been studied adequately, however, and study is continuing.

The United States Geological Survey, the Iowa Water Resources Research Institute, the Corps of Engineers, the Iowa Natural Resources Council, the Department of Environmental Quality, the Conservation Commission, and the universities, as well as the Iowa Geological Survey, have studied and evaluated segments of Iowa surface water and continue to do so. It has varying quality and limited supply. Not all of the water can be used as everyone would desire. There must be sharing. There must be restrictions on use and amounts that can be withdrawn from both surface supplies and the subsurface aquifers. There is a lot of water in Iowa and a lot of water surrounding Iowa. But it is not always where we want it or where we need it. The local water table is the most vulnerable to climate and to the change in demand. And the local shallow well is the first to suffer.

We have until recently largely ignored the need to conserve water in Iowa. We always felt that we had an abundant supply, though more limited in some places than others. Now the demands of the supply are beginning to exceed the availability and the recharge capacity. We cannot afford to mine our water. We cannot afford to destroy our aquifers. We cannot afford to risk to add pollution to the surface waters or the subsurface supplies. A new look at Iowa water law and water regulation is underway. Hopefully, we will have the wisdom to deal with the situation equitably and wisely. But the task is monumental. Awareness of the problem and concern for conservation is a part of it. But sharp controls and restrictions on use will be necessary as demand increases and as abuses are noted.

From all sectors of education--the press, the schools, the government agencies, the users, the drillers and pump installers, municipal supply managers, sales persons--all must use straight forward integrity in dealing with the water supply problems that we face. Our churches, our civic organizations, our youth programs like 4-H, Scouts, Camp Fire, FFA, the state extension programs, all are involved. Iowa 2000, public interest and public action groups, voter groups, political groups, all have a role to play. Iowa is not like the ocean where it is water, water everywhere and not a drop to drink. In Iowa it is water here, water there, but the water I want just isn't there. My neighbor has it and I haven't got it so who really has a right to it in the first place. Iowa water laws interpret it to say that the water belongs to the people of Iowa. It is then imperative that we manage it well and use it wisely to the fullest extent of its availability.

SOIL

William Griener

Mr. William Griener is the Director of the Iowa Department of Soil Conservation.

You know, I was in Room C today, Panel C, and there's lots of information being exchanged here at this meeting and there will be a lot more. It reminds me of a joke a man told a while back about the man in his very late seventies who was at this meeting, and this particular speaker had quoted many, many statistics. One of them he was quoted was that for every man in the United States over the age of seventy there were ten women over age seventy. And the old man contemplated that set of statistics for awhile and he turned to the man next to him, and he said, "You know, that's the most useless piece of information I've ever heard." I hope that the information that we put forth here will be better than that.

My part in the program is to talk about soil. It's not going to be a scientific talk. I am going to talk to you about how you can become involved as teachers in the many programs. But I think that "Iowa at the Crossroads," the subject we are discussing today, is a very important topic. And when you consider the relationship of water, soil, and open space and air in Iowa's future, the topic takes an increasing importance. I've been involved with the programs, the soil conservation programs, in the state of Iowa for many years. And I want to briefly discuss the department, soil conservation districts, and their various programs, and relate how people can become involved with them.

But let's take a look at the soil. The soil of America is plagued by a great paradox. Along with air, water, and sunshine it is probably the basic resource, the most important and familiar to most people, yet the least understood. The soil is everywhere around us. It is, if I can stretch the meaning of the words a bit, commonplace but not a common resource. Soil is continuous over the land surface, except for the steep and rugged mountain peaks in the lands of perpetual ice and snow. Soil is related to the earth much as the rind is related to an orange. But the rind of the earth is far less uniform than a rind of an orange. It's deep in some places and shallow in others. It may be red as the soils are in Hawaii. It may be black as they are in much of Iowa. It may be sand or it may be clay. Be it deep or shallow, red or black, sand or clay, the soil is the link between the rock core of the earth and the living things on its surface. It's the foothold for the plants we grow. Therein lies the main reason for our interest in soil.

The soil, the mantle of the earth, is far from uniform but all soils have some things in common. Every soil consists of mineral and organic matter, water, and air. The proportionates vary but the major components remain the same. Every soil occupies space. As a small segment of the earth it extends down into the planet as well as over its surface. It has length, breadth, and depth. There are some distinctions we have in mind when we talk about land and about soil, but in many respects they are the same. I am reminded of another definition of soil. Actually it was a little essay that was a part of the National Association of Conservation District Soil Stewardship booklet that dates back to 1960, and I think it's appropriate that we discuss it today. It was entitled, "Consider the Soil." It goes, and I will quote: "It lies as far as the eye can see. It covers millions on millions of acres around the globe, yet it is a rare thing that cannot be replaced. The soil is a living thing, yet it can be destroyed. The soil is a fruitful thing, yet it can become sterile. The soil is God's gift to mankind given unto our stewardship, yet it can be just spoiled and wasted. The soil produces crops and birds and grasses and trees. It cannot be duplicated by chemistry or physics. The soil is an intricate house of myriad elements, yet it is so commonplace it is to be known as dirt. It fills the flower pot in Manhattan, serves as a garden in Minnesota, and produces an orchard in California, this thing called soil. It is the spectacle of the Grand Canyon, the flatness of the plains, and the rolling confluents of the Shenandoah Valley. This thing called soil. It is the source of our nourishment, it provides the means of our protection. God has willed we can live with it, we cannot live without it. Consider the soil, consider it well."

Well, to that I say Amen. I have a very high regard for soil, as most Iowans do, because it is a source from which new wealth is generated each year. As an example of this, Iowa's cash farm receipts in 1974 amounted to 7.3 billion dollars, wealth that was generated from the soil. However, those of us in the Soil Conservation program are worried. We are worried because we are losing too much of our top soil each year. We are also worried that too many people may be thinking of soil as a second-rate expendible resource. This is wrong, and it's criminal to believe this way. Additionally, it is costly, immoral, and dangerous.

The fact is that good soil, what we sometimes call prime and unique agriculture land, is becoming more valuable every year. It is not a second rate resource and it is not expendable. It is a finite resource not to be wasted. The price of prime farm land has been going up steadily in the marketplace for use as farm land. The price of this same land has been going up sharply in the market place for nonfarm uses such as housing and industrial sites. The products we produce from lands are steadily growing more valuable, and I'm sure this trend will continue. As our population grows here in the United States, there is an automatic increase in demand for food and fiber.

Taken as a whole we're probably the best fed, best clothed nation in the world. And we want to continue that way. In addition, the products of our farms and ranches take on an increasing importance in the nation's foreign trade. We need those export markets. We ship abroad about 1/2 of our wheat, 1/2 of our soybeans, 3/5 of our rice, and 1/3 of all the tobacco and cotton produced on American farms. The money generated by these sales helps us to buy other services and commodities we need, such as oil.

I should mention that America has also contributed it's full share over the years to help alleviate the recurring outbreaks of famine and starvation in various parts of the world. When there is hunger it is food from American farms, mostly wheat, rice, and soybeans, that suffering people seem to look for first. That food, I scarely need to mention, didn't originate in the warehouses, elevators, or freighters; it came from soil. One seventh of all America's food production comes from Iowa's soils.

Well, this sets the stage in dealing with our most basic natural resource, soil. I hope that I have succeeded in convincing you that soil is important to all of us, but I suppose that you are thinking now what can you do as a teacher to protect this natural resource. You probably think that only farmers or professional soil conservationists can become involved in the soil conservation program. That's not true. Any citizen in the state of Iowa can become involved in soil conservation programs today if he or she chooses to do so. You, as teachers, are tremendously important to this program or any other resource conservation program because through you we can impart a wisdom and an awareness in today's young people to properly care for our resources.

In the few minutes that I have left let me tell you how you can become involved. In the State of Iowa there are agencies with which you may or may not be familiar. These are the Department of Soil Conservation in which I am involved and Iowa's one hundred soil conservation districts. Let's discuss these for just a minute. The Department of Soil Conservation was created in 1939 as an agency of state government to act for the state in carrying out responsibilities and provisions of laws governing soil conservation districts and other programs. Since the orginial legislation was enacted the responsibility of soil conservation districts in the department have been expanded to include the state's erosion control law, a state funded cost year program for soil conservation practices, inclusion of cities and towns in the program, plus many other activities. The Department is responsible for assisting the six conservancy districts established in 467D of the *Code*. Other duties of the Department included licensing of all mine operators, registering mining sites, and determining that mines are properly rehabilitated after mining operations have ceased. There are approximately eight hundred mine sites registered in the State of Iowa. That responsibility is set forth in Chapter 83A.

The Department is governed by the State Soil Conservation Committee which is a policy making body for the Department. This consists of six farmers, one from each of the six conservancy districts, one at large member representing cities and towns, and one representing the state mining industry. They are the voting members. They are appointed by the Governor and confirmed by the Senate. There are also five ex-officio non-voting members.

There are one hundred soil conservation districts in the State of Iowa. Each is organized on a county boundary basis with the exception of Pottawattamie, which has two districts. These districts include all areas within their boundaries, cities and towns and all farm areas. And they're governed by soil conservation district commissioners. Oftentimes I have heard them called soil conservation service districts, and if you want to make a person in the Department of Soil Conservation boil, just use that term. That is a common misunderstanding, and hopefully, we can get you straightened out on that.

These commissioners are elected by all qualified electors of the district for six year terms. Any qualified elector may vote in a commissioner's election, may sign the nominating petition of a commissioner, or may serve as a commissioner. And in 1975 the first session of the General Assembly amended the Soil Conservation laws to provide that commissioners would be elected on a nonpartisan ballot at the General Election beginning with the November, 1976 election. Well, districts, the State Soil Conservation Committee, and other people close to the program feel that that action was a very definite asset to the program and it provides all people an opportunity to vote and to take part in the district's activities if they wish to do so. And it should be noted that it has not always been that way. When districts were first started back in the late 1930's or early 40's only land owners or operators could be a commissioner and could vote in a commissioner's election. But amendments to the district law over the past twenty years have brought it to the point where we are today.

Earlier I mentioned these six conservancy districts established by Chapter 467D of the *Code*. These districts were created by legislation enacted by the General Assembly in 1971. And thereupon these coincide with the major river basins of the State of Iowa. These districts were created as a part of the 1971 Iowa law which also established procedures through law by which sediment could be declared a nuisance and abated as such after due process, commonly known as Iowa Sediment Control Law. That law is administered by Soil Conservation Districts with assistance from the Department.

And the Department is also involved with another program in which Iowans are taking part. This is commonly known as section 208, Public Law 92500, and this involves the 1972 amendments to the federal Water Pollution Control Act which were enacted by the United States Congress. This is a story in itself. But, very briefly, the Department has been delegated the responsibility for planning actions necessary to correct the nonpoint pollution problems in the State of Iowa. The Department of Environmental Quality is the designated state agency responsible for submitting a final plan both for the nonpoint and point source pollution efforts.

Nonpoint source pollution has been defined as water pollution, 1] the source of which is uncontrolled by any person, that is the water pollution results from precipitation, natural flooding or snow melt; 2] the pollution itself is not traceable to a discreet identifiable source such as a facility or industrial process; and 3] the control of nonpoint source water pollution is best achieved by planning and management techniques rather than by affluent standards of end of pipe treatments to remove pollutants.

One of the main features of this planning effort is to have public participation. It is essential that the public have a voice in what is planned and ultimately the method by which nonpoint source pollutants will be controlled. The general objective of Iowa's 209.8 source efforts are 1] to identify how much and whether nonpoint water pollution is occurring; 2] to determine the causes and processes by which nonpoint sources are contributing to the water pollution problem; 3] to suggest technical, economic, and socially feasible control alternatives; and 4] to use public input, and that's important, and influence in the entire planning and implementation effort.

Now, to meet Iowa's water quality needs, priorities, and problems, public participation will be integrated in the planning stages of the final water quality management plan. The Department has established an organization mechanism to insure public participation through a network of citizen advisory groups which are established 1] locally through country resource coordinating committees, conservancy advisory committees, and OPP area wide planning agencies; 2] through regional 6 basin advisory committees; and 3] statewide through a policy advisory committee. Now, these groups are organized as follows: 1] the local country resource coordinating committees represent the local public and are open to anyone willing to work on Iowa's water quality and problems for the next two years. This is where you can all become involved. 2] Conservancy District Advisory Committees represent the six River Basin Regions and are made up of an elected representative from each of the local resource coordinating committees contained in their region. 3] Seventeen OPP areawide planning agencies represent local units of government and are made up of local government officials and other public representatives who elect representatives to serve on the Basin Advisory Committees. And 4] these Basin Advisory Committees, representing the six River Basins, are made up of their representatives. And then, of course, there is the State Policy Advisory Committee. Now I recognize that this is a brief review of the soil conservation program which includes soil conservation districts, conservancy districts and the 208 planning effort, but as you can see, any citizen can become involved whether he or she lives in a city or town or on a farm.

All of Iowa will benefit if the state soil and water resources are properly maintained and conserved. As you know conservationists have long lived by the theory, "Use Without Abuse." In other words, we are not preservationists but conservationists. And I want to point out that the local soil conservation districts can be a very significant source for you in teaching subjects on soil and water. These districts have staff that can lend assistance to you and also have a limited amount of educational materials at their disposal. I would strongly suggest that if you are interested in obtaining material on soil and water conservation or materials on soils that you contact your local Soil Conservation District office. There is one in every county in the state of Iowa, and they are generally located in the county seat [the offices].

And finally, after listening to all of this, I hope that you are now aware that everyone can be a part of the soil conservation program; and I hope that many of you will join the ranks of others in working with the soil conservation people in this state. Many teachers are already involved in soil conservation districts in their education committees. Teachers are serving as chairpersons of these committees and are doing an excellent job. They are performing an outstanding service to the program in the State of Iowa by taking part. All you have to do to become involved is to contact the local district office, and I can assure you, you will be accepted with open arms.

OPEN SPACE

Dr. Edward L. Kozicky

Dr. Edward L. Kozicky is Director of Winchester Group of Olin Corporation.

"The outdoors lies deep in American tradition. It has had immeasurable impact on the nation's character and on those who made its history. When an American looks for the meaning of his past, he sees it not in ancient rooms but more likely in the mountains, the forests, by a river, or at the edge of a sea. Today's challenge is to assure all Americans permanent access to their outdoor heritage."

I believe that all of us at this conference are in agreement with this philosophy. The problem at hand is how to assure future Iowans, your children, a chance to enjoy their outdoor heritage. Iowa is a very special state. There may be more scenic and more spectacular countries in other states, but Iowa has a special richness, solidness, durability, and a tranquility that few other states have. Iowans have always had the reputation of solving their own problems. Regardless of what other states do, Iowa does not rely on big government to conserve the best parts of its world. Iowa citizens carefully examine the problem, try to figure out where they are going, and what they want to do, and then do it, as exemplified by this conference.

Not long ago we had a letter from a Texas graduate student who asked, "How come Iowa has produced so many great conservationists and pioneered so many great conservation programs?" I don't know, but few states can match the proud conservation history of Iowa. It is the birthplace of Ira Gabelson, George Henderson, Aldo Leopold, Emerson Howe, and many other conservationists. It was the first state to set up a bipartisan conservation commission and lift conservation out of the spoiled politic systems and put it on a professional basis. This is where wildlife conservation first went to college, where Ding Darling set up the first cooperative wildlife research unit, largely with his own money.

Your conservation commission has been blessed with dedicated commissioners and excellent directors since its conception. The Iowa state park system is unique; it goes back to 1917, and by the mid thirties there was an impressive system of state parks and preserves. The philosophy was to offer a public outdoor recreation facility to everyone in stategic locations. By 1933 when the first Iowa twenty-five year conservation plan was drawn up, there were already thirty-nine state parks and preserves in the state; but even then, over forty years ago, the report emphasized the necessity of local action in developing county and city parks. The report on that plan noted, and I quote:

"The state cannot undertake to provide all of the outdoor recreation facilities; in fact it should only supplement the local park systems. Taking over projects which have a statewide or regional significance and which local authorities cannot be expected to handle. Eventually the great bulk of parks for day by day use will be provided by other than state action, by the counties, cities, and park districts. For the acquisition development of local parks one item of legislation is very much needed. Municipalities now have the necessary authorities but counties have not."

Twenty-two years later, in 1955, the Iowa County Conservation law was passed. There is nothing quite like your county conservation program anywhere else. Not on this scale and not with this effectiveness. Long before the Federal Bureau of Outdoor Recreation was ever dreamed of, Iowa counties had their own programs. I wonder if you realize just how revolutionary this really is.

As of January 1971 there were 833 individual areas comprising 61,385 acres acquired by the County Conservation Boards in ninety-eight counties. The budget for the current year is in excess of $12 million. Today better than 50 percent of the boards are staffed by professional, trained employees. So much for a job well done. How about the jobs that still need doing.

The Iowa Conservation Commission has been busy with an open space program. They have submitted a ten year state comprehensive outdoor recreation plan. The Iowa legislature has been appropriating a million dollars a year for matching funds; however, with the shortage of funds this year they are cutting the annual appropriation to $500,000. What happens in October when the BOR comes up with an estimated $4.6 million in allocation to the state of Iowa? Will the state, counties and local municipalities be able to match these monies? Or are Iowans going to lose a portion of these funds for lack of matching funds?

I have read the report of the Iowa Conservation Commission to the 66th General Assembly on "Open Space for Iowa." It is a good, factual report on what has been accomplished; but what is needed is an imaginative, comprehensive, readable twenty year plan for Iowa's open spaces with this price tag. Big, imaginative programs are easier to sell than small ones. Iowa has a population of about 2.8 million, and at only twenty-five dollars a head we are talking about a $70 million dollar program. Certainly open space for outdoor recreation should be worth twenty-five dollars to each Iowa resident.

Iowa needs a package program, such as a trust for tomorrow. We not only need a persuasive presentation on open space at the statewide level, but we should also have the same kind of hard sell literature at the county level. The people of Iowa should have an open space goal, both at the state and county level. Outdoor recreation, the use of open space, means different things to different people, such as hunting, fishing, picnicking, camping, bird watching, snowmobiling, water skiing, archery, etc.

If I have any expertise, it's in the field of outdoor recreation; and of course, over the years I have developed some personal philosophies. Long before the energy crunch I was a firm believer in finding my own outdoor recreation close to home. On a limited budget one can have a hundred local outdoor trips for the price of one out of state trip. Further, it dawned on me that the successful hunter or bird watcher or fisherman was the individual who spent considerable time studying a given area or body of water. The more you know about an area the more successful you will be. Then, too, most of us need short trips to recharge our mental and physical systems. We need to get away, even for a few hours, from the routine of daily living. A national theme of the 70's has been "Discover America," but I kept busy and happy just discovering my own backyard.

The Mississippi River is only five miles from my home, and I have learned to enjoy it. It has been my good fortune to travel in all fifty states and a good portion of Canada, and I have come to the conclusion there are no more easily accessible areas of hunting and fishing. The change of scenery is nice, but I have enjoyed better fishing at home than in the Canadian wilderness. For two reasons, the waters are more fertile and productive; and two, I know where, when, and how to fish the local waters. The point of all this is that I am firmly convinced we need to hold open space for outdoor recreation not in some other state or province but in our own cities, towns, and rural areas.

Last winter I was driving through Illinois. I became depressed by the landscape. It was solid black from county road to county road with an occasional building. Does it sound like parts of Iowa? There were only a few trees around the homesteads to shade the summer picnic tables. To me it looked like a disaster waiting to happen, but to others it looks and smells like money. Have we forgotten the dust bowl of the thirties? Is a quality life to be reduced to worldly possessions? If it is, we are all riding for a fall. Open space, green belts, natural eco systems are not only necessary for the well-being of human life, but other forms of life with which we share our planet. As charity starts at home, so does the quest for open space, and to paraphrase Aldo Leopold, who once said, "Relegating our wildlife or open space to Alaska is like relegating our hopes for happiness to heaven. We may never get there."

Land planning is a coming just as sure as tomorrow's coming sunrise. We are all for it, until our own acreage is considered, then land planning strikes the most sensitive nerve in the human body. And that is the nerve that runs between the heart and the billfold. Land stewardship is in this same category. We may legally own the land, but in reality we are only stewards for a given acreage for a few short years. The welfare of the nation and future generations depends on how we treat, admire, love, and respect our land today, not tomorrow.

Iowa is blessed with beautiful streams and rivers, land that is important to the protection of a watershed. It also has great scenic and recreational value. Hopefully, most of these rivers will be kept in their natural, free-flowing state. They are green belt corridors. When I was at Iowa State between 1948 and 1956 I took many a pleasant canoe trip between Ledges State Park and Handes Bridge on the Des Moines River, a green corridor of natural landscape. Soon this section of the Des Moines River will be inundated. How many more of Iowa's unique streams are to be dammed in the name of flood control? You cannot afford to lose them. They are your most irreplaceably natural asset.

Engineering devices are often designed to "improve upon nature." At best, they merely help to correct man's past abuse of the landscape, and they never quite fit into the natural world. The efficiency of any dam depends on the rate of sedimentation, and every pond or lake starts to strangle with sediment the day the gate is closed. Somehow we have drifted away from the treatment of the land where the raindrop falls in our soil conservation efforts, and have slipped into a love affair with engineering. We believe that man is capable of conquering nature with one structure or another. We look upon structures—the dams, drainage systems, and channelization projects—as proof of man's superiority over the natural world. But as John Steinbeck once noted, "We are flies conquering the fly paper."

There should be an all out effort to preserve Iowa's free flowing streams in her natural state. Scenic easements may be one way of doing so. The concept of the county conservation boards working in cooperation with the Iowa Conservation Commission for local action could well be the salvation of open space in Iowa. The respected philosophies and goals were spelled out very well in 1933 in the Iowa Conservation twenty-five year plan.

How do we acquire land for open space between purchasing fee? When one realizes that 97 percent of Iowa is privately owned, all methods of acquiring private land need to be explored. The best approach to private property is the local approach, such as the County Conservation Board. There are possibilities—the donation of private property for public use. The primary motives for land philanthropy ranges from pure altruism to pure self-interest. Taxes have created a bright climate for land philanthropy. The value at the time of the gift can be deductible from taxable income

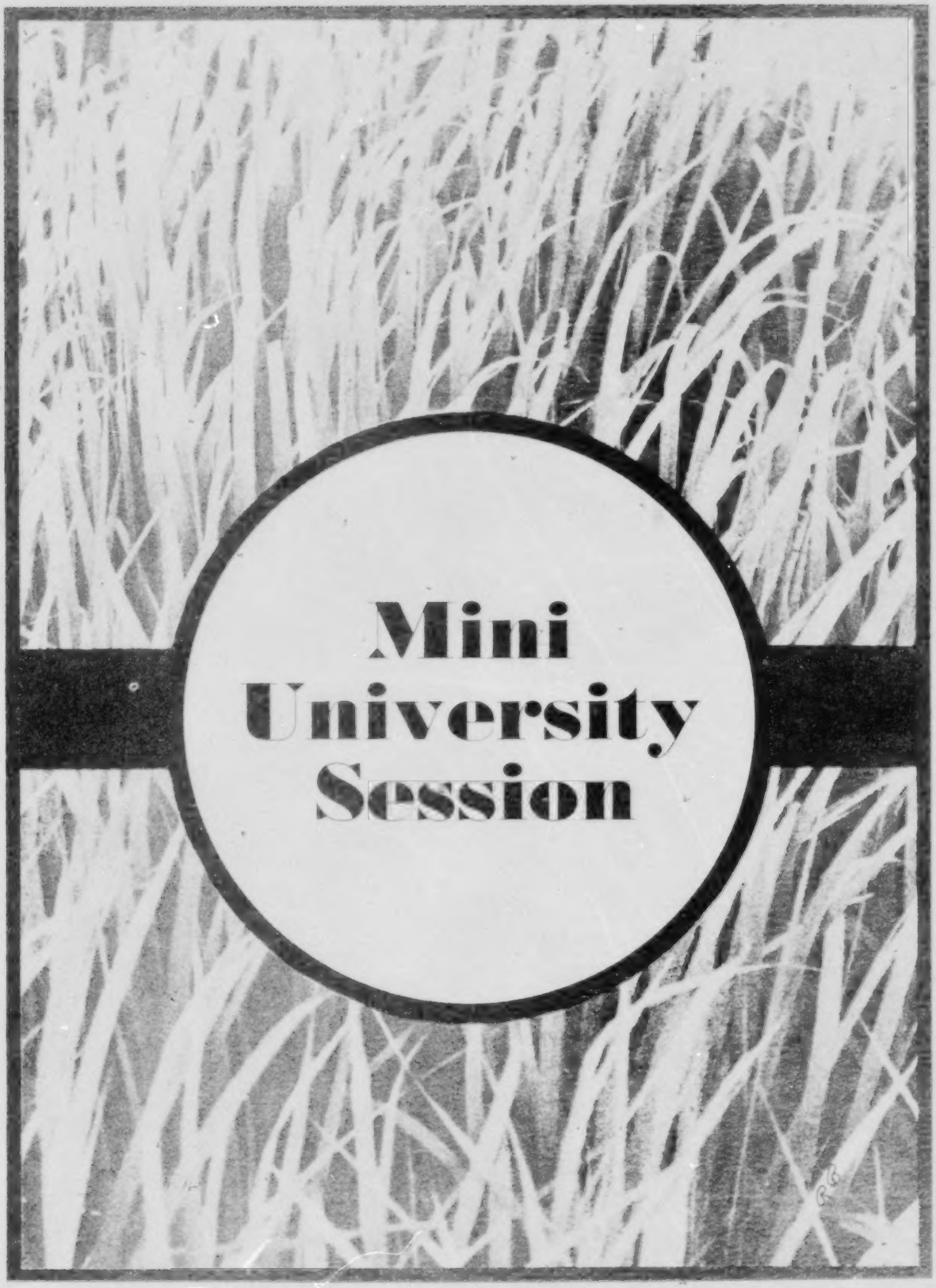
up to the limit of the donation, and the donations can be spread over a period of years by donating serially. The landowner can direct the future uses of the land, retain lifetime tenancy, etc. The possibilities of land philanthropy are many, not only for the County Conservation Board but the Iowa Conservation Commission.

Many landowners are not aware of the tax benefits, lifetime tenancy, and their ability to direct the future use of their property. It would be well to explore these possibilities and explain them in simple language in a brochure to be distributed to potential doners. And another possibility is open space easements. It is becoming more difficult for the private individual to continue to hold land open with rising property taxes. The landowner's tax problems and the community's open space problem may be resolved by an open space easement. If the land owner whose land should remain open gives a binding guarantee not to develop the land, the assessor must assess it as if it was going to be developed. Such an easement gives no right of public access, and all the property owner loses is the right to sub-divide or otherwise diminish his value as open space. Such easements constitute a charitable act, and a decision has to be reached on a reasonable figure for tax purposes. Now, in conclusion, I would like to talk a little bit about the conservation philosophy. It has been my privilege to have been in this field for about forty-five years, and I guess I am speaking to some of the young educators in this field, and some of you younger people who are about to engage in what Marian Clawson chose to call this morning, the Conservation War. You are going to go through many battles. You are going to lose some, and you've got to develop a philosophy quite early in this that you expect to lose some, but down the line somewhere you know you are going to win the war, if we are going to continue to exist as the nation and have the quality of life we now have.

We've got to remember that we have been a country of exploitation for about 180 years. To me there were some skirmishes in the late 1800's and early 1900's, but the first real battle came in the dirty thirties when everybody got excited about the future of our natural resources. And we started a number of things in soils and water and forestry in particular. Then came World War II and then the good life of the sixties. It took the environmental seventies to wake us up again to such things as the necessity for clean air, quality of water, and quantity of water, and we had emotion involved in those things; but we expect again, that I expect in my lifetime at least, to see a pulling back from this because the turning point to me was the thirties, the end of exploitation. But exploitation is not stopped wham. It continues on, and we're at a period of transition, maybe we are in the 100 year conservation war, I don't know, but somewhere down the line we are going to win it, and we need good soldiers.

I would like to also say that once in awhile you hear something about emotion not being necessary, but emotion is in conservation. One cannot talk about the love of land, respect for land, and the quality of environment without being a little bit emotional. And, I say to you, don't overlook the value and power of emotion because out of emotion eventually in our good democratic system, we look for facts and ways to develop the future. And emotion is important, it is important to move the conservation war ahead.

I would like to say also that I am very optimistic about the future, and why? Well, we talk about water and air quality coming out in the seventies, but I don't know how many of you realize that we also have the cream of our nation going through our technical schools and our universities and colleges. We have some of the finest young people today in the resource field that we have ever had. They are far better trained than the earlier crop, such as myself, ever had a chance to be. They are going to make their impact on the natural resource field. They are going to provide the leadership that we need. Furthermore, they are armed today with some of the best technological tools known to man and they have tools at their disposal to solve problems that we have never had. And more than that, to me, is the public awareness of their environment, of the quality of effort in their environment, and their awareness for conservation of the natural resources.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Session

ENVIRONMENTAL EDUCATION IN IOWA

Chaired by Bernard L. Clausen

Bernard Clausen is vice-chairman of the Iowa Environmental Education Advisory Committee and an associate professor at the University of Northern Iowa.

Clausen: The purpose of the mini-university sessions is to give people a chance to swap ideas in an exchange of programs instead of just focusing on the problems. They add another dimension which may prove to be a more valuable part of the conference to some participants. As a starter, I would like to share some things with you, and then I would like to open for discussion.

The Upper Midwest Council is a group of people representing education, business, industry, finance, government with a very long list of the top people from our region. The region extends through Montana, the Dakotas, Iowa, Minnesota, Wisconsin. The Upper Midwest Council was formed to promote a better understanding of regional choices for the future. It just completed a recent study of "Critical Choices for the Upper Midwest in the Next Ten Years." The process by which the critical choices were identified represents the collective thinking of three hundred panelists of diverse backgrounds throughout the seven state region.

The more than two hundred force statements present a view of the future, including the degree of impact, the time period of greatest impact, and the implications. Natural resource related choices received the highest rankings of significance. The following statements summarize the director of these forces: increasing world demand for food will accentuate agricultural production in the Upper Midwest; conflicts over land use will increase with particular emphasis on agricultural land; growing need for water resources will increase competition, storage and preservation of water; energy costs, shortages, developing needs and impacts will continue to dominate the Upper Midwest; conflict between environmental and developmental interests will increase; finally, these forces, individually and collectively, suggest that conflict and change can be anticipated during the next ten years. Many changes will be substantial, almost unprecedented. Change will be associated with resistance. Conflict appears as a recurrent theme.

Resource utilization appears to be the area of primary conflict. Also significant will be conflicts over human service demands. Education of the citizens to deal with these resource utilization conflicts which will become acute over the next ten years is vital. We cannot deal totally with the elementary level. They will not be of an age to help us. We must reach the adult population. We are participating in this conference to determine how we can help the people of Iowa become knowledgeable enough to make these critical choices wisely. This is why Governor Ray was eager to call us together.

As we focus on Iowa at this conference, I think we need to see that we fit into a much broader picture. UNESCO has a program on environmental education focusing toward a meeting to be held in Moscow this summer. In preparation for the world meeting, UNESCO sponsored regional meetings in various parts of the world. The North American Conference was held in St. Louis last fall. All of the regional conferences seemed to reach similar conclusions. I have selected some of the recommendations developed at the Conference for the Arab States because they have had no previous efforts toward environmental education. Environmental education was identified by the Arabs as a key factor in attaining a socially sound, environmentally concerned pattern of economic development. The training of teachers in environmental education at the university level was strongly urged as the highest priority of the region. Multi-disciplinary teams were suggested as the best means of conducting teacher training programs. A sourcebook on environmental education in the Arab region was recommended, as well as model programs for radio and T.V., which were noted as the major media for public and environmental education. Training programs for newspaper editors, T.V., and radio producers were given high priority.

The other regions, including North America, followed the same pattern. Environmental education is an international movement. Significantly, other nations were willing to put more of a percentage of their budgets into environmental education than the U.S.

We are fortunate to have with us Dale Brentnall, who is a member of the National Council on Environmental Education which was created by the Environmental Education Act. The Council supervises the United States program for the Department of Health, Education and Welfare. Dale Brentnall has agreed to share with us some of the national policy happenings in environmental education.

Brentnall: Thanks to Ben for this opportunity. We almost lost the environmental education act which is P.L. 91-516 two years ago this coming June, but it was reestablished, reenacted and amended under P.L. 93-278. It will probably terminate this year unless the Congress takes action again to reestablish the act or change the format entirely.

I can only speak to the laws that are presently on the statutes. But, the purpose of this program is to provide financial assistance for research, demonstrations, projects designed to educate the public on problems of environmental quality and ecological balance.

Clausen: I am going to try a different opinion, and Dale knows me well enough so he won't throw anything at me. I have a concern if we try to develop our program on federal money. Who's going to pick up the tab when the federal money runs out? We use a lot of federal money to get a program started, which we call soft money. Once they get started the federal money eventually runs out and somebody is left holding it or dropping the program. If the thing is built on a sequential type program, which I think many of them are, and if it is a three year program, the federal contribution drops each of the three years. The local contribution builds up until the local contribution has taken hold of the whole budget for the particular project.

In a way I am kind of glad that the proposal that Duane and I wrote as a joint proposal with the University of Northern Iowa and the Department of Public Instruction was not funded. The lack of funding forced us to develop our own way for Iowa within our own means. I think we now have a handle on something which is going to be even better than had we gotten the federal funding to make it possible to rush in with a particular program. We could do a lot more here. One of the things that came out here this morning from the speakers was that we seem to be able to do things on our own in this state. Certainly from the North American Conference at St. Louis, which had people there from all states in the unions and all provinces of Canada, both Duane and I were kept busy throughout that meeting answering questions about the Iowa program because we were doing things here in this state in the field of environmental/conservation education that the other states had just begun to start thinking about. I was told by a girl from California that we have done things successfully here that she hasn't dared to try in California. The other states' answers were the same. By going to that meeting I came back feeling pretty good. We sometimes think that we have a lot to do, and we know we do have a great deal to accomplish. We accomplished one heck of a lot in the years, and we don't need to bow our heads to anyone in the whole United States. You have that same feeling from the National Council.

Brentnall: Yes, I do. Absolutely. Iowa does have many things going for them in the area of environmental education as Ben has mentioned.

Question: I guess why I came in is I would like to have an idea of what Iowa is doing in terms of new contacts and programs that I may not know when I walk in. I don't know if that is restructuring what you are doing or ask you to stop what you are doing. That is what I would like to know.

Clausen: You are jumping the gun by about five minutes, Bob. Before we permit the group to answer your question specifically, we do have a person in the group who has been conducting an Environmental Education Needs Assessment for the Department of Publice Instruction. Mrs. Debbie McRae has been doing this research for her Masters Degree at the University of Northern Iowa.

McRae: Probably the most interesting aspect of my research at this point would be the things that teachers really want. I think the most significant point which I found was that teachers have had very little formal training in environmental or conservation education. Much of their background has come from personal experience, ranging from growing up on a farm to reading about nature. Some of the teachers indicated a need for more education. The type they are looking for was the professional training which they could pick up at a workshop, a professional meeting, and through high quality in-service programs. The teachers expressed a need for community based information and local resource people who could work with them in the context of the school system. They considered junior high and senior high the levels for greatest emphasis, with elementary level being where one starts with awareness. Major problems, of course, were time and money. Most teachers did not indicate any strong problems with their community, administrators, or school board.

Question: How many teachers did you survey?

McRae: Our total sample was twenty-two hundred. We received a 53 percent response.

Question: What about the content of environmental education as presented by these people?

McRae: We deliberately did not give them a definition of environmental education. We got the information through a fairly complicated question which listed twenty-four environmental concepts or principles.

Question: What kind of teachers were you sending the survey to?

McRae: We had eight subgroups: secondary science, secondary social studies, secondary other, elementary teachers, elementary principals, secondary principals, superintendents, and other administrators.

Clausen: The samples were drawn proportionately from the sub-populations. There was a given percentage of the social studies teachers and an equivalent percentage of the science teachers.

McRae: We had 750 elementary teachers compared to 250 secondary science teachers.

Question: How do they differentiate high quality in-service for teachers?

McRae: On the questionnaire we had space for written comment. We had a tremendously high comment rate. They did not go into what high quality in-service would be, but rather complained that they were tired of poor in-service. This is one area that needs a closer look. I think one of the conclusions that will come out is the desirability of in-service training where they develop materials for their own use in the classroom.

Question: Could you compare and contrast teachers' responses versus administrators' responses?

McRae: Only on some things. Elementary teachers and elementary principals come out very close to each other. There was a little more separation between secondary principals and secondary teachers. The secondary principals are looking at the needs of not only their science teachers but also their music, math, P.E., etc. teachers. The superintendents as a whole were a very receptive group for environmental education. The only big difference between teachers and superintendents was superintendents favored using textbooks more than did teachers.

Question: What did they need and what did they want? What are they doing or what do they think they ought to do?

McRae: Generally, a lot of people are trying to do something, and they feel they should be doing more. A lot of them indicated they were taking field trips, but they wanted to do more of it. Here is where you come into the lack of money. More outdoor labs and access to outdoor labs are needed.

Question: Let's stop there. What do they do on the field trips?

McRae: We didn't go into that kind of detail.

Comment: About 90 percent of the perspectives that I get going around the state is that biology and related areas are covering environmental education while the physical sciences are the remaining 10 percent. It should be 50-50.

McRae: One of the interesting things we asked was where in the curriculum environmental education belonged. Currently they see it being taught on the secondary level in earth science. Only the secondary science teachers disagreed. They saw it as being taught in the biological sciences. Generally, the secondary science teachers thought it should be in earth science and biology with lesser emphasis in the physical sciences and social studies. Of the social sciences, economics was ranked high and political science was ranked low as desired areas for environmental education. The secondary level favored a separate environmental/conservation course, while the elementary teachers and administrators did not.

Question: How about secondary administrators?

McRae: The superintendents do not want a separate course, but the principals do.

Comment: Can I comment on this? I have done a little looking into this special physical science point of view. I found that if you do it strictly from a textbook analysis, you don't find very much environmental education in biology, earth science, or physical science texts. At the NSTA regional meeting, the physics teachers told me: I think this is all very interesting; I would like to talk about nuclear energy, alternative energy resources, and the need to conserve, but my administration looks at me from the point of view of how well I am preparing my people to go to college to become physicists. This says something to us in terms of getting environmental education into certain courses that have a strong college prep character. We have to deal with the fact that secondary teachers are highly oriented toward specialization and not to interdisciplinary applications.

Question: Did your study give any indication of what teachers thought environmental education meant?

McRae: There is a very strong place for environmental education in the elementary program on the awareness

level. Looking at natural resources tends to be what the secondary program includes. On the secondary level they see it as a science. They tend to look at it as basic ecology rather than as environmental.

Comment: In pulling together a lot of the basic material (the pillars upon which environmental education might be built), they may not be beyond constructing the foundation, with the stories and roof yet to be built in their own understanding.

Comment: I would like to reflect back to the colleges to see what is happening as they train these instructors. I received much more environmental activity studying biology than I ever did in chemistry, physics, or earth science in my college preparation.

Question: I guess I am speaking from my own small sphere, but I am interested in what people in this room are actually doing.

(Editor's Notes::) The following were discussed by the group: Project ECO at Ames, Marshalltown in-service and staff development, Iowa Teachers Conservation Camp of University of Northern Iowa, Project ASSIST of University of Iowa, AEA consultants, State Advisory Committee on Environmental Education, Energy Policy Council, Department of Environmental Quality, Iowa Geological Survey, ISEA, environmental studies program at Iowa State University, undergraduate and graduate programs in environmental education at the University of Northern Iowa, Soil Conservation Districts, Iowa Division of the Izaak Walton League, Iowa Wildlife Federation, Iowa Conservation Education Council.

Clausen: Over 3/4 of the counties in Iowa have environmental/conservation education committees. Through these committees the teachers and the organizations are working together at the local level to improve programming. Committees have gone different directions depending upon the needs within the local counties, and this is as it should be. Some have been more obviously effective than others, but I think that every county which has such a committee has accomplished some good things. The committees have been quite willing to share with the rest of us so that we don't have to duplicate their efforts. We have been able to do all of this without the infusion of federal monies. We have used local contributions, local funding, plus a lot of free time and labor from members of those committees. The Soil Conservation Service has published an article on the Iowa County Committee System and its accomplishments.

Question: I am sort of foreign to education. I don't quite get what your concept of environmental education is.

Clausen: This goes back to my earlier comment. I am not too sure that we would all agree on exactly what we are talking about. For that purpose, the Iowa Environmental Education Advisory Council developed the following definition:

"Environmental education means the lifelong process dealing with people's relationships with each other and their natural and altered surroundings. It includes the relation of population, pollution, resource allocation and depletion, conservation, transportation, technology and planning to the total human environment."

Pretty all encompassing is the point you get from this definition. I believe the key to it is the process, not a body of subject matter. If I understand Mrs. McRae's data correctly, this is where the teachers of the state don't quite understand what we are calling for.

Question: You have used the words "multidisciplinary" and "interdisciplinary." Do they sum it up?

Clausen: We are talking about an educational process which cuts across all disciplinary topics. It is a process of education rather than a natural history approach or a pollution approach or a resource approach. It is a critical thinking type of process which will enable people to make the critical choices necessary. To me that is environmental education.

Question: You have been talking about teachers and their relationships to students. But it is that segment of people who are not teaching, the adults, who are the decision makers today or the people who affect the decision makers. We have to reach them and we are not doing so. Continuing education is one small segment of that. But from the state agency viewpoint, how do we relate the water problem, how do we get these facts to the general public, the decision makers, and the people who influence the decision makers?

Clausen: This is what we are supposed to be dealing with tomorrow. You have stated the goal many of us on the steering committee have for the Governor's Conference on Environmental Education.

Comment: I don't think you can underplay the effect educating kids has on educating adults. It may be the single

best way to get to the adult population. It seems the younger they are, the more apt they are to ask questions. When they start asking questions, I think it starts hitting home. You see a lot of change in adults because of them.

Clausen: I really think there is a great deal of environmental education going on that is outside the school. Very little of it may carry the heading of environmental education. Frankly, I am not concerned about the term. The job is what is important to get done. The putting across of information plus the discussion and description of issues is what's important. There has been much publicity in the press on various legislation pending relative to environmental problems.

The legislators have been receiving more mail on the bottle bill than most other issues. It almost ranks with the deluge of mail on the mourning dove and daylight savings time issues. To me this is environmental education at work. People in Iowa know the system. They study the issues and they make their comments. This is the environmental education process that we are talking about.

Another example is the Conservancy District Program based on resource advisory committees at the local level. We in the Iowa-Cedar Conservancy District have adopted a formal set of goals and objectives with top priority being given education. It isn't that we tagged this as a top priority for someone else to do. Every county delegate was willing to accept the responsibility for disseminating information and involving others so that they can be informed about making decisions relative to Iowa's land and water resources. This is an ongoing program mandated by state legislation. We should all become involved in it because we will all become better informed and educated environmentally at the same time we are helping make decisions. Regardless of what we try to label an environmental education, my experience with the Conservancy District program and with 208 planning is that the people who are becoming involved in their area are what I call environmentally literate. I couldn't be more pleased with the product of our Iowa schools over the years. These people are an environmentally literate group quite capable of dealing with the real issues involved in water quality control, flood plain and flood control, surface runoff and erosion, etc. I will admit that not everyone in this state is environmentally literate, but we at least have a big minority that is. It is a minority which is assuming leadership and which is active and vocal.

Question: How do you teach the person just picking up the newspaper not to get befuddled by the issues, not confused and lost in the hopelessness of it all? How do you teach those out of school to critically think about what they read?

Comment: I am not so sure that it's my responsibility to be a critical thinker on every issue that is presented to me in the media. Sometimes I think we should lay the responsibility on people who communicate with us in an accurate way. We also have to consider that a mandate has to be laid out to make people communicate accurately.

Question: What do you do with the reporter who takes a carefully prepared news release and changes the facts?

Clausen: I would hope that all of the workshop groups would try to come up with some solutions as well as identification of problems. We are beginning to develop into tomorrow's workshop sessions. I don't want to steal their thunder, but I hope we have gotten at some ideas tonight to show you that the groups have done a good piece of work today. I would like to reward the people who are actively engaged in an environmental education program. Would you stand up? The group that is now standing are the people with whom you might want to talk relative to Iowa's environmental education programs. They have something to share. We have been at our discussion quite awhile. I am going to adjourn it now and let you talk to each other.

LAND USE

Burl Parks

Burl Parks is assistant professor of landscape architecture and community planning at Iowa State University.

If we took the United States out of North and Central America and figured that as a percentage of land area, how much do you think we would have? Anyone want to guess? We'd have 5 percent. There is 5 percent of all the land area in the world in the United States. Now, of the land in North America, 1/3 of it gets enough rainfall to produce crops. Another 1/3 is covered with forests, so you see, we only have 1/3 of the land in North and Central America to utilize for the production of food and fiber.

Let's turn to Iowa. Iowa loses land from agricultural production every year, and has for the last twenty-five years had over thirty-five thousand acres of land every year taken out of agriculture. That means 141 farms of average size in Iowa every year are going out of agricultural production. We lose that much from agriculture. As you know, we have 1/4 of the best agriculture land in the world, not the Grade A land in the world, because I don't know what Grade A land is, and I don't think too many people really know what Grade A land is.

How much of the population, would you say, in Iowa lives on farms? How much of the population? Actually about 16 percent of the population lives on farms. But if you check the census you would find that 43 percent lives on farms. By definition the U.S. Census considers any town that is twenty-five hundred or less in size as rural population. We have, as a matter of fact, six or seven counties in Iowa that according to the census have no urban population at all. Yet any town that is incorporated in Iowa, even if it has ten people, and we have some that small, is governed by the very same laws that govern Des Moines and that govern Davenport, that govern Sioux City, Waterloo, and Cedar Rapids. So you see, those people, even though there might not be enough grouped together, are urban people under the meaning of the law and how we apply our laws to the land and the people who use it.

Land area per capita is another important issue as far as I am concerned. In 1860, if we took all of the land in the United States and we divided it up between all the people who lived in the United States, we would have sixty acres of land for every person in this country. By 1900 we had only twenty-five acres per person. By 1950 we had only fifteen acres per person. And that includes the fact that we now have two extra states: Alaska, the largest state in the Union and, of course, Hawaii, were added to those statistics. In 1976, with all of the land (this includes the deserts, the mountains, and everything else) there are only 10.6 acres of land for every man, woman, and child in this country. We have come from sixty acres per person about a hundred years ago to about 1/10 of that. Arable land is a figure that is hard to get a hold of because there is not any wide agreement as to what arable land is. Supposedly, that is productive land. In 1959 we had 2.8 acres per person. Right now we have about 2.35 acres per person. And by the year 2000 if we continue to grow the way we have, we'll have about 1.35 acres per person of arable land. That is not very much land to feed and clothe all of us when it comes right down to it.

In my twenty-five years as a planner, population in the United States has increased by 43 percent--by sixty five million people--since I graduated in 1950. Since then we have used at least ten million acres of our land for some kind of urban purpose, and that does not include the land that is outside of corporate limits in airports and highways and other urban uses that are not farmland. So, you see, we do have a real problem with respect to how we treat the land resources in the country. Statewise land use has been of some interest in Iowa since about 1970. Iowa got into the land use issue as early as any of the states in the nation. We may not have moved quite as far as some states, but we have had quite an interest develop in land use. As a matter of fact, the governor appointed a committee to study the issue of land use and make a recommendation as to whether or not we ought not to embark on some program of a statewide land use policy.

You may remember that activity on the part of the state government as the "Laverty Committee." That committee conducted hearings throughout the state; and I think one of the things that came out of it, if nothing else, was the fact that there is a very broad and widespread interest in land use policy in the state of Iowa. It is a controversial subject. If you read the paper tonight, you know there is going to be an issue brought forth on the Senate floor very soon, and there are wide differences of opinions as to what ought to happen to any land use bill that comes into the Senate. A bill has passed the House three different times and it hasn't really got a good argument in the Senate, but I think we might get one this year. There is a new bill carrying the same number as the House Bill being proposed in the Senate right now. We'll probably hear some discussion about that in the paper and over the news media in a very short time.

What I would like to do now is to throw out a few questions and ask for discussion from the floor. I suggest we first address ourselves to the issue of whether or not we really need a statewise land use policy. And if we do, could we do it by local control? Could we have a land use policy that works to the benefit of all Iowans if it's all done by local control? And then I would like you to discuss at some point or another what you consider to be the greatest problem with respect to land use in the state of Iowa today, with particular emphasis on the issue as to whether or not we ought to make an effort to preserve agricultural land. There is also the issue of annexation. Should annexation be permitted? Should it be made more difficult? Should it be made easier? How should we treat the issue of fringe developments that begin to develop around every city in Iowa? When I say every city, I include all 950 of them because it occurs around every one of them no matter how large or how small. And then another issue that we ought to look at a little bit is some of the ambiguities that we have with respect to the pursuit of some kind of land use policy.

I think almost everyone in this room probably agrees that, at least to some degree, we need some kind of policy with respect to how we treat land resources in Iowa, and feel we should do something about it. Out of one side of our mouth we are saying "we should do something about this issue" but then we do so many things that are directly opposite to what we say we should do. For example, county zoning ordinances in Iowa (and we have about sixty of them in effect today) have zoned much of the land in the county for an urban use, for urban residential development, for industrial development, and commercial development. So we're saying we must preserve agricultural land, but on the other hand we say we are going to zone all of the agricultural land for urban uses which encourages people to come out and use it.

We have a lot of other things, and probably the most visible to me is when I drive through the rural countryside, (this isn't too prevalent in Iowa today, but it is in some of our neighboring states) are the water towers I see out in the country. These are rural water systems, and they are financed by the federal government. And so the federal government says we ought to have a land use policy, too. Yet, they make it possible for us to develop facilities that encourage us to move out of town. Maybe this ought to be one of the issues we talk about.

And then the one no one agrees upon is who should control land use if we have it in Iowa. Should it be the farmer? Should it be the city slicker? Should it be the environmentalist? Who should it be? I talk about land use a great deal around Iowa, and the thing that has always been a little bit amusing to me is this. If I am talking to a big city group or any urban oriented group they say we are against that land use bill because it is rural dominated; we have got too much rural domination in the state land use bill as it's now approached. I go the next day and talk to a group of farmers and they tell me they are opposed to that land use bill because it is too much urban oriented; it is dominated by the urban forces. Let's just discuss some of the issues. What about a statewide land use policy? How do you think we could do it from the standpoint of local control?

Question: Well, you would have to have a multiple advisory board from the given areas. Again, you would have to have ninety-nine advisory board committees to make it work.

Mr. Parks: So you say then that if we have a local control in the statewide land use policy that each county should have a representative.

Question: Again, you have to have someplace where the local ideas come from.

Mr. Parks: What about Ankeny? What about Indianola or Monticello up in Jones county? Should they be represented or should they be represented by the county? See, that also becomes an issue. If we are going to have a representative from Jones County, should he come from Monticello or should he come from Anamosa or the rural area?

Question: When you say local control, are you saying on a county wide basis?

Mr. Parks: That I think is a question. What do we mean when we say local control? Is county as local as you can get? Do you say we have to have grassroots control?

Question: My father has a farm in Clinton, Iowa, and they are putting the highway through. The only stipulation was when he sold the farm was to someone who intended to farm the land. That's local control. He was contacted by at least six people from Japan. He just said no, I will sell to someone who is in the community preferably with land adjoining my own farm. That's local control.

Mr. Parks: I think you bring up another issue of local control. The smallest form of local government is the farmer.

Mr. Parks: Actually what he is doing is using his own prerogative to put restrictions on the land, which is a legal issue procedure in Iowa.

Comment: Local control family level hasn't worked. Considering land use today we wouldn't be wasting 141 farms a year. As far as county control goes I know that in my county there's at least one of the board of supervisors for ten years who has been for land control. Everytime he says it he just about doesn't get reelected so he doesn't say it anymore. That doesn't work, either.

Question: I think everybody got the idea that I said one member from each county that advises your local people, local planning board. It's going to act on what's going to happen. And when I say one member from this committee, each month the statewide planning commission could meet and ratify what the county has done. That's really what I meant by local feedback.

Mr. Parks: In other words, what you're saying is that there should be local activity in the development and administration of a policy, but that this probably should stand the test of review of a statewide agency of some kind.

Question: Let me ask this question. You are talking about the land use bill that is supposed to be coming out of the Senate. 505 has passed the House for three years. It contains local control. Are we talking about something different or are we to go from there? What are you trying to get at?

Mr. Parks: Well, actually, all I am doing is posing the question as to whether whatever bill we have should have local control.

Question: 505 has passed the House. Are they happy with anything in it? Or what?

Mr. Parks: Is everybody familiar with the content of House File 505? I think it's 210 this year. Would you like a very brief review of it? The bill, which has passed the House three times and has been almost the same form every time, provides that there be created a department of soil conservation and land use. The nucleus of the state land use commission, which would administer to that new department, would be the existing state soil conservation committee, as Bill Griener explained today. Six people actively engaged in farming, one representative of cities and towns, and one representing the mining industry would be the eight members. Now to those eight members would be appointed five additional members. One representing a city over twenty-five thousand, one representing a city between twenty-five thousand and ten thousand, one representing a city under ten thousand, and then two more who represent a broad cross section of the public interest, whatever that should be conceived to mean. That would be the statewide land use policy commission who would have the responsibility of preparing guidelines for the preparation of local land use plans and state agency land use plans which, incidentally, must stand the approval of the state legislature. In addition to that, they would be charged with developing the statewide land use policy and requiring approval of the state legislature. The legislature proposes that the policy should be developed by local inputs. This is accomplished by creating a county wide land use policy commission in every one of the ninety-nine counties. The bill as presently written would require that the board of supervisors be members. In other words, they appoint themselves and they become 1/3 of the county commission. Another 1/3 of the county commission would be made up of the soil conservation district commissioners in the county. The other 1/3 then would be made up of representatives of all of the cities and towns in that county. They would be called in caucus by the county auditor and from their group they would select the other 1/3. Presently if the county board of supervisors in your county is three members, then that means that each of the other two agencies would appoint three members each making a nine member committee. If the board is five members, then each of the other two groups would appoint five members, making a commission of fifteen at the local level.

The bill provides that this commission is responsible for developing a county wide land use policy including all the cities and towns. And they may do so in any manner they feel is appropriate. They could go out and do it all themselves. They could hire a planning consultant or some kind of consulting firm to assist them. Or they would have the option of contracting with the regional planning agency within which their county is located to develop the information and basis for their land use plan. But the final decision for what that plan would be rests with the county.

These ninety-nine county plans would then be submitted to the statewide land use policy commission who would conceivably weld them into a statewide land use policy which would be submitted to the legislature for approval. That, very briefly, is the structure of the act. Now, there is a whole lot of words in the act--forty-two pages of it. And I wouldn't want to try to say that I know all of the words in it. But basically that's what the bill is now. It provides the local input on a county basis, which has some degree of subservancy, I suppose, to a state policy commission. But at least whatever they do must be within the statewide policy adopted by the legislature.

Question: Could you put a timeline on that, please?

Mr. Parks: The present bill, now I could stand corrected here, but the first one at least, required that each county would submit their county wide plan within three years. If they failed to do so, then the state policy commission could

develop the county plan for them along with the necessary rules and regulations to enforce such plan. So I am assuming that it would be at least three years on that basis.

Question: Do we have now anywhere in the world a plan that would be an example?

Mr. Parks: I know of none. The nearest thing to the land use policy might be in some form of monarchy, where one man has the right to determine what happens in his country. Probably it is easier to do it if you have a dictatorship. But I don't think you want to go that route.

Question: Would you consider England's Green Belt areas and the fact that a lot of the land in England cannot be developed as an example?

Mr. Parks: Well, England has a very strong regional form of planning, land use planning. I suppose there is a heavy involvement of public land ownership and control. That's an issue that's worth discussing here. How much land would the people of Iowa permit the state to acquire?

Question: I have a question about this bill. Are there any procedures in this bill that could prohibit development during the period that the counties are preparing their plans? What is to prevent someone who has an inside track from acquiring land and developing it?

Mr. Parks: I don't think there's really anything that prevents that. The bill does have, however, what we call emergency powers, or in zoning it's called interim zoning, where if the bill is passed and we are going to have a statewide land use policy, then it's conceivable that people would run off and start doing things right away in order to get it started before the policy took effect. The state bill does have a provision where the state land use policy commission would have something to say about what went on. Of course, I am sure that would also require approval of the legislature. The bill really carries with it the inference that the final say in land use policy in Iowa would still be with the state legislature. Well, as a matter of fact, I think local zoning would still be in effect after the policy is adopted. But you see, the trouble is we have forty counties that aren't zoned. I think that's part of the problem.

Question: Who has the authority for land use policy in the counties that are zoned?

Mr. Parks: Well, that's a part of the issue of local control. Would we have adequate policy, for example, if we had ninety-nine counties having charge of the policy?

Comment: It seems to me there is a danger of power structure in our counties. For instance, out in Blackhawk county, John Deere would have tremendous influence over the zoning processes there. If you only had the power of local operation, Blackhawk County has done an excellent job. But mining interests in other counties might be able to wield more power unless you have something up on top to overrule, maybe a broader look.

Comment: One of the things I think should be pointed out about this House File 210 is that all those people on that county land use commission are put there by the electorate to represent the cities and towns, soil conservation district commissioners, and county board supervisors. They are all subject to recall. If someone doesn't perform as the people want, the next time you vote you can put them out.

Comment: The catch on that is that Blackhawk County is controlled by John Deere so they are not going to vote against who John Deere wants to put on that board.

Mr. Parks: I think what you are saying is maybe we still could utilize local commissions, but maybe there ought to be some broader base to some decisions. And this may be another issue or feature of the land use policy act that I ought to mention; that is that it does provide that those issues that we frequently hear referred to as critical areas or areas of critical concern, and that sort of thing, are retained by the state. And those issues, for example, are land use decisions that go beyond the bounds of the single community. It could go beyond the county, for example. Anything that would affect a broad spectrum of the landscape then would really be a state issue, and influence then would have to be exerted on the state level rather than the local county or city level.

Question: What is the critical area defined in that bill?

Mr. Parks: I should have brought that along. I think I can name several of them. It may bring to mind the rest of them.

The first one has to do with the fragile and historic lands and renewable resource lands. Another is large scale developments; that is the kind of development that, if it goes into a community or county, it would affect several other counties. Maybe a shopping center may be a generator of heavy traffic volumes and that kind of thing. Well, it really would begin to affect trade, I suppose, in the area as well. Natural hazard lands where uncontrolled or uncompatible development can endanger life and property, including flood plains, areas frequently subject to weather disasters, and areas of unstable geological formations or areas where we could have earthquakes, floods, and that kind of thing; one example is, the state would have control, if this were in California, of all the houses sliding down the mountainside. This would be one example.

Renewable resource lands where uncontrolled or incompatible development which results in a loss of production of continued long-range productivity could endanger future food, water, and fiber requirements of more than local concern including watershed lands, aquifers, and aquifer recharge areas and forest lands. Key facilities mean a public facility designated by the state commission on the basis of criteria adopted by the general assembly which is expected to result in development and urbanization exceeding local impact, including, but not limited to, major airport, major highway interchanges, including interchanges with frontage roads, access streets and other limited access highways, major recreational land and facilities, and major facilities for the development of generation and transmission of energy. And large scale development means any private development which is determined by the state commission on the basis of criteria adopted by the general assembly to likely generate issues of more than local significance designated by a city or county where substantial evidence indicates that the uncontrolled or incompatible development could result in damage to the environment, life, or property or the long-term public interest which is not designated as a state permit area.

Now those are basically the things that we mean when we say areas of critical concern or key facilities. It should also be pointed out that the control of land or the right to regulate land or control it in any way really lies in the hands of the state, not with the county or not with the city. The only way the city or county can have a zoning ordinance is because the state issued their powers to them. And in effect, a state land use policy is taking back the power to deal with these issues called areas of critical concern. When you think about it, that's really the guts of the whole bill. And someone asked a while ago how long the zoning ordinance would stay in effect locally. Local zoning ordinances would remain in effect even beyond the adoption of a state land use policy. The only things they could not control are these very issues we have talked about. They would still control all those local issues that we are talking about--where the local grocery store is located, where the commercial zone would be located, where you permit industry and that kind of thing. They would simply have to perform within the limits established by the State Land and Use Policy. At least that would be my personal conception.

Question: According to that definition, I may not have heard correctly, I didn't hear anything about prime agricultural land. Is that included in the critical areas?

Mr. Parks: That's in the definitions. That's also in the areas of critical concern. Renewable resource land, to me, is agriculture. I think it falls in there.

Question: Isn't it in the first intent?

Mr. Parks: Well, the definition. But I think what you are saying was not mentioned in any of these key facilities or critical areas, but it is in the legislative intent. It is the intent of the general assembly of the State of Iowa to provide for the orderly use and development of local land-related natural resources in Iowa, to preserve private property and to preserve the use of prime agriculture land for agriculture production.

Cities really have the right to adopt zoning which prevents construction in the flood plain that impedes water or causes danger to life and property.

Question: I agree with that. But I wonder if this bill doesn't supersede the city that took a very liberal stand.

Mr. Parks: Yes, I think it would if the city took an act that was not in the limits of the state policy. In that case, it would. I will take your question in a moment. I have to recite an interesting statement by the commander of the Corps of Engineers in Rock Island. I used to be planning director in Davenport, Iowa. I don't remember his name, but he said really there are no floods but there are many instances of people building in the flood plains. And I think that's true. Back in Baltimore they even sued the government to permit victims to rebuild in the flood plain. It's not good land use policy to build in the flood plain because when we have a damaging flood, we create a disaster area and we apply for federal aid so we can get it rebuilt in order to be ready for the next flood. I wonder if that is not really an imposition on me because I don't live in the flood plain. Why should I pay for what others did.

Question: I think that in that bill the state land use policy does not have a right to veto. They can send back a county

plan with recommendations. But if the county chooses not to accept the recommendations of the state policy they don't have the right to veto the county's plan.

Mr. Parks: I don't know that they have veto powers. But I think it would follow a compromise meeting which if, for example, the Senate passes a bill quite different than that the House passed, there would have to be an interim committee or a conference committee to work out the differences. I think this would probably be the kind of situation that would occur in a case like this.

Now I think we've really kind of ran down the issue of local control. One thing I would like to say. I like to think that police power is the very basis of all of America, the way we live. The police power in effect says that we have the right to do as we please so long as we don't infringe upon the rights of our neighbor who has the same rights. Now that is true in almost everything we do. We could own a gun, at least now we can. But we are not allowed to shoot our neighbor with it, we are not allowed to discharge it in the city limits and that kind of thing. And we can own a car but we are not permitted to drive it through somebody's yard. We aren't allowed to cross the yellow line but still the police power says you can't do that for the safety and welfare of your neighbor. Land use falls into the same category. We can own land, we can do whatever we want with it, so long as the way we use it doesn't infringe upon the rights of our neighbors who have the same rights. If you begin thinking about that long enough it goes a long ways. And I think that really gets into the issue of how many rights would we take away, for example, if we had a state policy or a local zoning ordinance. How many rights do we take away? Do we take any rights that we legally have now? So that's one way of looking at it. Now, the question of where is the biggest problem with respect to land use in Iowa.

Comment: Urban sprawl.

Mr. Parks: Urban sprawl is actually urban users that extend outside the limits of the incorporated city. Now, if we take all the land in cities today, that is in the limits of the corporate cities today, only about 1/2 is occupied in urban use. The rest of it is vacant. Yet, where is all the growth occurring? Outside of cities.

Comment: Out in the valley.

Mr. Parks: It's out across the line.

Comment: One of the problems is the taxation structure. The guy who owns the farm next to the city has a property value so high that he can't afford to farm it anymore.

Mr. Parks: Well, in a way.

Comment: It really boils down to agreeing; it's the private rights verses the common.

Mr. Parks: I think for anyone to accept any kind of land use control they have to also accept the philosophy that the right of the individual should be subordinate to the right to the community, that his rights really aren't supreme over everyone else who lives in the same vicinity. If you think only in the terms of individual's rights, and my home is my castle, you never can accept any land use control because you always feel that some right is being taken away.

Is anyone familiar with what or whether or not, even though land is close to urban development out in the county, they really raise tax levies on that? I think they levy the tax on the basis of its use. I was speaking to the issue here of the land being so high on the farm that he couldn't afford to farm it anymore.

Comment: There is something that states farmland inside the city limits that is farmed is taxed as agricultural land so there is a tax advantage of not developing the land inside the city because you lose the tax advantage.

Mr. Parks: As a matter of fact, that doesn't even have to be farmed. As long as it's ten acres you get the agriculture tax rate which roughly is a mill and a quarter opposed to the city rate of anywhere from 25 to 30 mills. Which means, really, if you own a farm and the city annexes it, your taxes are going to go down. A lot of people don't believe that. But that's true.

Comment: You know, when we accepted zoning in this country, the real argument, as I understand it, the thing that really sold it was you were zoning in order to protect the value of your property because if you didn't have zoning laws some undesirable was going to build next door to you and your property value would go down. I think that the same kind of thinking has got to be put out before we are going to get land use. We have got to protect and keep the quality of our key resources and protect it from this undesirable development. I really think that is the only way that people can start seeing it in those terms. Not that my rights to do something when it has been taken away, but this is the only way to protect it.

Mr. Parks: We have the other problem. I agree with you, up to a point. When someone owns, let's say 160 acres at the edge of town which he bought fifteen years ago, and he paid $150 or $200 an acre for it, and now -someone is going to give him $3,000 an acre, you see you suddenly lose all interest in protecting the value of your land. You would just as soon sell it. I don't know who it was, but sometime someone said that putting people like that in charge of land use is like putting the mouse in charge of cheese.

Comment: Which is an argument for not having it locally controlled.

Mr. Parks: Yes, I suppose it would be.

Comment: I think a lot of the problem is that a lot of people don't receive a benefit yet from forest land use. For instance, such as they do in Vermont. I think until we enlighten people, or people become more aware of the misuse of our land resources, we will have difficulty getting land use accepted.

Mr. Parks: I don't want anybody to feel embarrassed, but how many are in favor of statewide land use policy. You see what I mean? We are here talking to ourselves. The people who should be educated are not here. You can only educate those who want to be educated. Therein lies the biggest problem I think we have.

Comment: Burl, I think there has been a lot of misinformation circulated about this. Some people have said to stop all development in cities, which isn't true. Other people have said land use, they look at the term land use, and that land use is going to tell me how many cattle I can feed, how many acres of corn I can grow, where I can grow it. Which is totally untrue. This is not going to stop development. It is simply going to guide us a little bit.

Mr. Parks: Give us a tool to make better choices with where land does develop.

Question: Why do you feel a state land use policy would educate the public any better than going to local areas in the first place? I think people become rather turned off by the fact that it's coming from the state; if you could go to the local areas in the first place.

Mr. Parks: Well, yes. But I don't think you are going to educate anyone by having a statewide land use program. I think the business of education came up as a means of getting people on the statewide basis to accept a state policy.

Comment: I don't think that is ever going to happen if you leave it up to the state to do it.

Mr. Parks: I think that's questionable.

Comment: I think we are getting involved in semantics. When we say land use policy I think a lot of us are also including the county commission. The decisions that will be made locally by the counties. I don't think any land use plan or policy will ever succeed unless the local people have input. If you try to dictate land use in Washington, D.C., it will fall flat on its face.

Comment: That was my point.

Comment: When we talk about a state land use policy, it is very heavily oriented toward county, the county land use commission. I think we are dealing in semantics here. The county land use commissions have a lot of input.

Mr. Parks: If you digest that bill I think you really find that what happens is the state takes unto itself those issues of key facilities and critical concerns. The other issues are really in the hands of the local counties and local towns, as a matter of fact. I am not sure that's in the bill, but I am sure what would happen is that if the county has its land use policy they tell every town in the county to develop what they, the town, conceive to be the policy for the use of land in their town and submit it to us as a county land policy. And they will adjust the local plan in that it will fit into a county wide plan which goes on to the state. The state, I think, might have to make some adjustments here and there in order to make it a state policy.

Question: According to the present annexation policy, all a town must do is show that it could provide services, that's basically all they would have to show?

Mr. Parks: Not now. It used to be that way. But now if any town is going to annex they must develop their proposal to annex and submit it to the city development board in Des Moines. And if that city development board then feels that this is a reasonable proposal, they appoint a member from the county from where the land will come from and from the city doing the annexing. Next they set and hold a public hearing on the issue involving both localities and the regional planning commission or anyone else who wants to be heard. Then, if they decide after that hearing that it is a

reasonable proposal, then they direct the commissioner of elections in that county to conduct an election on whether it should be annexed. And if it passes by majority vote by the people residing in each of the areas, the area to be annexed and the city, then annexation will occur. Now, there is a voluntary method where if in any area, all of the owners adjacent to any town petitions that town to be annexed, the town may accept them by resolution and the whole issue is over with. But the law for annexation is now much different than it used to be. It changed with the adoption of the Home Rule Act.

Comment: I still think you have to have state legislative direction to set up the mechanism in each district before you get any land use policy. I don't think it will work, that you start at the local and present to the state. You have got to have some direction from the state which the whole state is going to have to do. That would be to pass a state land use planning position which says to the counties, this is the way you set up and you then draw up your plan.

Mr. Parks: And that's what those guidelines are that are required by the bill.

Comment: You will never get them going from the bottom up.

Question: I have a question. I don't know whether it is covered in the bill or not. If there is a land use bill and, for example, the DOT wants to build a highway through an area, do they have to follow the state policy?

Mr. Parks: The State Department of Transportation is a state agency required to submit to the State Land Use Commission their proposal for land use under their jurisdiction, the same as any city or county must do. So any state agency must submit to the State Land Use Policy Commission their policy with respect to how they intend to handle land within their jurisdiction. Actually the Department of Transportation would have to get the approval of the State Land Use Policy Commission on issues like this.

Question: Would the Conservation Commission have to do that, too?

Mr. Parks: Yes, and the State Board of Education or any state agency.

Question: What is the objection then to the way that bill is written? I hear the Senate saying there is not enough local control. What is their alternative?

Mr. Parks: Have any of you seen the bill that was introduced in the Senate? I think there has been or will be. At any rate, I don't think you could get much more local control than you got in this bill. I really don't.

Comment: I think the question that Marion asked about the conservation commission acquiring land was very interesting.

Mr. Parks: They would have to submit a policy for land use, for their proposed land use policy.

Comment: Burl, you mentioned this idea of education and I think that is a rather important part of it. There has been a lot of education on it. The people that tend to listen to what they want to hear. And I am using as an example a gentleman I spoke to last spring who said that he had been against land use up until the first of this year. He has a railroad running at an angle across his farms which cuts off thirty-seven acres of farm. He has a high-line which goes across the farm another way. This he has put up with. And he said yes, I don't want land use. I don't want anyone telling me what to do. And then he got notice early in the year that another highway was going to cut another corner off his farm at a different angle. And just the day before I talked to him, in fact the day I talked with him, he got a certified letter in the mail saying that a pipeline was going across his farm 200 yards from the railroad which was going to be built this summer. He was suggesting that maybe the pipeline could use the same right of way as the railroad. And he said now he is in favor of land use. This comes back to the same thing. A lot of private owners do not want to be told what to do until something moves in across the farm that they don't want, and then they wish they had the support of the community to protect themselves. This is essentially what I see this land use bill doing. But we have not been able to convince a lot of other people that's what it does.

Mr. Parks: A local zoning ordinance or even the state policy gives you an opportunity to have something to say about what happens. You don't have that now. Wednesday night, after we had discussed the issue of both state land use and local zoning, a man asked to speak to the group for fifteen minutes. And he was granted that permission. And he read parts of this bill. And then he laid it down and he read the communist manifesto saying--And you see they are the same.

I would say that open space uses would be in almost the same category as farmland for the simple reason that when it's open space, if it ever comes to the point where we absolutely have to have it for feeding of people and the

WHERE ARE WE ON 208?

Larry Crane

Dan Lindquist

Larry Crane is Executive Director of the Department of Environmental Quality and Dan Lindquist is from the Department of Soil Conservation.

Question: "Where are we on 208?"

Crane: As a way of introduction, 208 is a section of the Federal Water Pollution Control Act which calls for water quality planning. The initial efforts in the planning were directed at local agencies. In Iowa, there are two local areas which were designated by the Governor. The first area is Des Moines in which the Central Iowa Regional Association of Local Governments (CIRALG) is doing the planning. The second area is Lake Rathbun. Both of those plans are under way.

As a matter of fact, the Des Moines area has completed the technical aspects of the management part of their plan. They held a public hearing on their plan earlier this month. We do not expect that they have finished that part of their planning even though they are at this stage. However, they are at least a year ahead of the rest of the planning going on. The Federal government has called this planning the Continuing Planning Process which has been dubbed "CPP" for short. Since they are calling it a continuing planning process, those of us who are involved in it are assuming that it is going to continue. It is not something that you start up, get a plan, and then just put it on the shelf and go back to what you were doing anyway.

The efforts have been aimed at trying to develop planning information that is necessary and that can be implemented. The idea is to implement the plan as much as possible, even as you go along.

The two local programs, Des Moines and Rathbun, have the total responsibility for water quality planning within their areas. They will then have their plans reviewed by the Department of Environmental Quality (DEQ) and the U.S. Environmental Protection Agency (EPA). DEQ's responsibility in that review is to see that the local plan will coincide with the state plan.

Question: Why were the Des Moines and Lake Rathbun areas selected as special designated areas?

Crane: They asked to be selected. There was a time period available to request designation from the Governor's office; and there was a limited amount of funds available to carry that out. The Des Moines area has a significant problem that desperately needed this kind of planning since there are so many small urban areas involved. Rathbun on the other hand is the only one of its type that I am aware of in the country. Planning for Rathbun is really aimed at protecting the lake against deterioration of water quality.

Question: Did the Conservation Commission request designation for Rathbun?

Crane: No. It was the local planning agency there. And on that point, there were some other areas that expressed an interest in being designated and have continued to express that interest, but there have been no additional funds made available for any further designation work.

Question: Could you give us a progress report on the plan at Lake Rathbun and the four-county area, and relate what the problems are down there with the planning process?

Crane: They had some problems, I know, at least initially just getting started. I think they have also had some considerable differences of opinion on what directions to take in the planning. It took them at least nine months or perhaps even closer to a year longer than Des Moines, which initially started the planning, to really get going in this planning effort. I think they have spent a considerable portion of their time looking at what you might call "land used related activities" and in particular the nonpoint source aspects in the area; and I do not think that is necessarily unanimously agreed upon by the group involved in the planning. On the other hand, the Des Moines planning was done by a group with relatively common interests all directed toward solving a point source problem, getting adequate waste treatment. In Rathbun's planning, there was quite a diverse group and differences of opinion on what they should be doing. At this time I could not say if they are going to come up with a successful plan, but they are trying.

Question: What other elements are involved in the 208 planning process beside the land use element?

production of food and fiber, it's there. So I consider that in the same category from the standpoint of policy with respect to the land. Farmland to me is open space, too. Well, I am not really sure. The bill really says that we must deal with all legitimate land users, and I think we sometimes forget that. The legitimate use of land is sometimes a salvage yard. And the aim of local land use controls or state use land controls is not to keep something out but it's to recognize the fact that we need land for everything, that we need to keep everything in its place as nearly as possible. I really see that if we had a policy adopted, and we had a policy in effect, that we still would have instances that was more appropriate to use very good producing agricultural land for urban purposes in some instances. But with a policy it gives us an opportunity to channel uses in certain directions and conserves a lot of it that's being converted to another use.

Question: Now this bill says that there are limitations or certain percentages on total land that can be designated as critical areas.

Mr. Parks: Probably, because Florida has that, too. You would be limited to 5 percent of the land area to uses that are critical areas and key facilities. Well, that's a question that I would raise particularly in respect to the Florida bill, and I would have to read this again. But how can they preserve farmland in Florida if they limit critical areas to 5 percent? I really think the preservation of agriculture land is a critical concern.

Question: Where in the bill is farmland defined as critical areas?

Mr. Parks: Actually, when I read this critical areas thing, farmland really wasn't mentioned. Farmland was read as an intent--a legislative intent. Plymouth County would develop a policy up to the Woodbury County Line or the Sioux City line. Sioux City would develop it up to that line. Now that's where there probably would have to be some coordination on the state's part with respect to any differences or about any problems that might arise between the two. That really is not clearly spelled out in the law, but I think that the right of the state to develop a state policy carries with it the right at least of causing things to be discussed and coordinated so that we have those differences at boundaries settled.

Comment: I think that's one of the few instances in that bill where the state land use commission has the authority to settle, dictating when there is a difference between two county land use commissions.

Question: How would the location of major highways be settled where they cross state lines?

Mr. Parks: Well, I would say that would be an issue at the state level, and I suppose the state land use policy commission would have to deal with Minnesota officials with respect as to how that is to be resolved. I remember how smoothly that went through Wright County.

Okay, who should control the land use policy? We haven't talked about that. Yes, I guess we have, in a way, haven't we? Ought to be total local control or state control. One of the problems I think might develop if we have total local control is that we would then have ninety-nine decision makers to make decisions with respect to state policy. That might be a little cumbersome. So that's why I think you need this one level. Any issue in respect to land carries with it local interest and state interest, and they have to be dealt with reasonably.

I remember when we were back saying that maybe it would be cheaper and more efficient if we had a regional planning agency. We could do a lot more for a number of governments because we had a broader base of support for it. And so we say get six, seven, or eight counties in our regional planning commission. Then what do we do? We start creating a regional agency for health. Then we create a regional agency for criminal-crime prevention. We start, and pretty soon we have got as many regional agencies as we had local planning commissions. I think we have to think about these things in a broader picture so maybe we can do an awful lot of things under one roof, rather than have a whole bunch of umbrellas. You have been to a football game where everybody has their umbrellas up. It never works very well.

Question: There hasn't been much discussion here on prime farmland.

Mr. Parks: The total intent of the bill, not the total, one of the primary intents of the bill is to preserve prime farmland; and if we are concerned about urban sprawl, I think that does say we're concerned about prime farmland right there.

Crane: There is an entire gamut of things that are called for within the 208 planning. Many of these are technical, looking at the point source and the nonpoint source. Others are management related such as deciding what sort of management structure is going to oversee this entire water quality management plan, the fiscal aspects, needs for legislation, local ordinances, and the things of this nature.

Question: How will these plans be implemented and who will be the implementing body?

Crane: Rathbun is, as far as I know, still undecided, so is Des Moines. That is what they have to fact very soon and we told them at the public hearing that their technical plan is quite excellent. Now what they have to do is get it implemented. They must establish a management system that will assure that it will be implemented. At this time they do not have such a system. They are utilizing an interim committee which was part of their technical coordinating aspect when they set up their planning agency.

Question: Is there a proposed management structure?

Crane: They have three or four that they are looking at right now.

Question: Are these recommended by the state?

Crane: No. I think that if the state got into the situation you could probably assume that the state's plan would be the one that no one would want to use. It is a local problem, and the local people are best equipped to decide what will work in their area; and they are going to have to agree on that. The state and EPA are willing to go ahead in this planning phase with actual construction grant planning but only through the planning phase. We will not support actual construction of any facilities until the management organization is in place. Otherwise, we have no assurance that anything is actually going to transpire.

Question: I understand that there is a large fish hatchery at Rathbun. The Conservation Commission probably has a vested interest in the quality of the water in that particular area. Is the Conservation Commission playing any part in the planning for the Rathbun area?

Crane: Not directly, as I recall. I am sure they are being consulted, but they are not a part of the planning group. They did have an interest in Rathbun but the citizens in that area also have a great interest. That is really the stimulus and not the State Conservation Commission.

At this point, I will launch into what we are doing at the state level in the way of carrying out the planning. We secured a grant in June, 1976, of approximately 1.1 million dollars to develop the state plan, and those funds are to run to November of 1978. The Department of Environmental Quality and Department of Soil Conservation will match those funds in part.

What we are undertaking is not a complete water quality management plan. It could not be completed in that short period of time with the amount of resources that are available. What we have is a series of plan activities that all should be implemented within a reasonable period of time after November of 1978.

The basic planning process is broken down into two parts. DEQ essentially is working on the point sources problem. The Department of Soil Conservation is basically working on the nonpoint area.

Question: Would you explain those two terms?

Crane: I certainly will. I am glad you asked. Point source is easiest to put a label on. A "point source" is a discharge into any of our surface waters which comes from a discernible point such as through a pipe. If the discharge does not reach the water that way then it is called a "nonpoint source." Nonpoint runoff can come from construction projects, runoff from the agricultural land, and also surface mining.

Question: Would the tiling system be a point source?

Crane: If that tiling system discharges into a stream, yes it would be considered a point source.

Question: Do you forsee, with nonpoint source pollution, controls on the amount of fertilizer a farmer might be allowed, the rate of application for the types of pesticides that he is allowed to use, and the number of applications?

Crane: You could run a longer list than that. If we knew these answers then we would not be doing what we are

doing in the planning area. I do not know what is going to be the outcome in the nonpoint source pollution control work. There are a number of options, a number of control alternatives, and these are all being reviewed from a technical, financial, political, and management standpoint.

Perhaps we ought to spend some time discussing the public participation aspect that has been set up especially for this project. EPA, under their grant regulations, set up a system of public participation that requires 51 percent of the representation to be local elected officials. These elected officials are public representatives. A total of 129 people are actively participating in the 208 planning process in Iowa.

Iowa has six major river basins which happen to coincide with the conservancy districts. In setting up the public participation organization there were six different organizations set up. One for each one of the basins. There are twenty people on each of these basin advisory committees. Ten of those people represent the conservancy districts and ten represent the local areawide planning agencies.

In addition to the basin advisory committees, there is the state policy advisory committee which consists of thirty-eight people. This statewise committee includes two representatives from each conservancy district who are also members of the basin group. It also includes one representative from each of the area-wide planning agencies. So there is a total of twelve conservancy district representatives, seventeen regional planning representatives, and an additional nine representatives that are referred to as members at large who were appointed by the Water Quality Commission.

These people are taking in all of the information from the various agencies involved in 208 planning, reviewing the information, and commenting on it. One of the first tasks that they had was to review what is called the continued planning process for the State. They reviewed the work plan, looking at all the things to be done, and commented on that. They are advisory groups to the Department of Environmental Quality and the Department of Soil Conservation in carrying out this entire activity. One hundred twenty-nine people certainly do not represent all of the Iowa citizens, but I think the cross section and the number of organizations that are getting into this does give a good overview from Iowa citizens into the planning process.

There was only one conservancy district actually in operation before the public participation for Iowa's 208 planning process was organized. The other five had to be established and are now in operation. That was quite a job on the part of the Department of Soil Conservation to see that whole mechanism got going.

Question: At what level are the actual decisions going to be made?

Crane: Well there is a whole gamut of decisions, as I see it, that are going to be made. There will be information coming up from the people who are participating in a planning process. Alternatives will be formulated by the staff and reviewed again by all of these people that are involved in the participation. The major responsibility of decision making in many areas rests with the Soil Conservation Committee and the Water Quality Commission. I am sure there are going to be a number of decisions which will go to the legislature to be resolved. But what we are going to have are technically sound alternatives. We are going to have to know what the various ramifications of these alternatives are from the public's viewpoint as well as politically and financially. All of these are going to have to be considered, and the more input there is into that process the better off Iowa will be.

Question: How many people attend the Basin Advisory Committee meetings? How many people are interacting? How many people are taking part in a given county?

Lindquist: The amount of participation varies quite a bit, but it seems to pick up as time goes along.

Crane: A lot of the responsibility for generating participation rests with those organizations out there: the Soil Conservation Committee, the conservancy districts, and the seventeen local areawide planning agencies. How much information they are getting out to the actual citizens they represent is a difficult question to answer. We are hoping that they are sharing their information on 208 water quality planning with the people they represent and trying to get ideas from those people.

Question: Does the Corps of Engineers have any involvement in the 208 water quality planning process?

Crane: They are not an integral part of the planning. Those of us who are involved would bring in the Corps whenever it is necessary, and at this time there is really little or no overlap because of the necessities of putting down what we are doing in the planning area.

Question: How are the water quality standards determined? What are the basis for them?

Crane: Water quality standards are basically scientific in nature. All of the streams are classified in accordance with their use. We have just redrafted all the water quality standards for Iowa. A hearing was held in March, and I would expect that the Water Quality Commission will make the determination in May as to what changes will be made in Iowa's water quality standards. There are a number of streams that are proposed for reclassification.

Question: Do the various planning committees have anything to do with setting the water quality standards?

Crane: The public participation groups started reviewing the water quality standards at the basin committee meetings several months ago. They have had a lot of impact into the water quality standards up to this point, but the final decision is that of the Water Quality Commission.

Question: Are you saying that the standards are not yet set?

Crane: The water quality standards have been in effect for a long period of time. They are reviewed, at least theoretically, every three years.

Question: How do they stand now?

Crane: I do not think I can give you that in a short answer. The water quality standards are a published set of rules that set limits for various aspects of water quality for various streams.

Question: Will Iowa have a difficult time in meeting the water quality standards for point source control and nonpoint source control?

Crane: I do not think it is going to be necessarily easy in either case. However, point and nonpoint are not necessarily directly related to one another. The point source pollution problem takes place during the time when the streams are at low flow and the nonpoint source problem takes place at times when you have high flow and high runoff, at which time you have quite a bit of dilution of animal wastes for the point source. I think we are making steady progress in the point source area. However, I also would say that it will be another eight to ten years before we could really say we have things well in hand. A lot of that is based on how long it is going to take to get the improved municipal treatment plant online and have the financial assistance available for that construction. Regarding nonpoint sources, I think that anything I would say tonight would be rather premature. But let me say that in the point source areas, we are in what we call Phase II planning. We are just starting the Phase I planning in the nonpoint source area, and the whole bank of knowledge that is available is considerably less than what was available for point source planning.

Question: What is the major source of nonpoint pollution?

Crane: I would say that, at least in Iowa, the major source is from agricultural land. This certainly would not be true across the United States, but it is true for Iowa. The basic thing is the sediment

In the nonpoint pollution study, what we are really looking at is the overall need for soil conservation. There is a certain portion of soil conservation that is needed because it has a very heavy impact on water quality. If you applied conservation practices to 30 percent of the land and you selected the right places you could perhaps solve 60 percent to 70 percent of the water quality problems. We do not want to lose soil whether it is getting into the water or not. We still want that soil to stay where it is for production purposes.

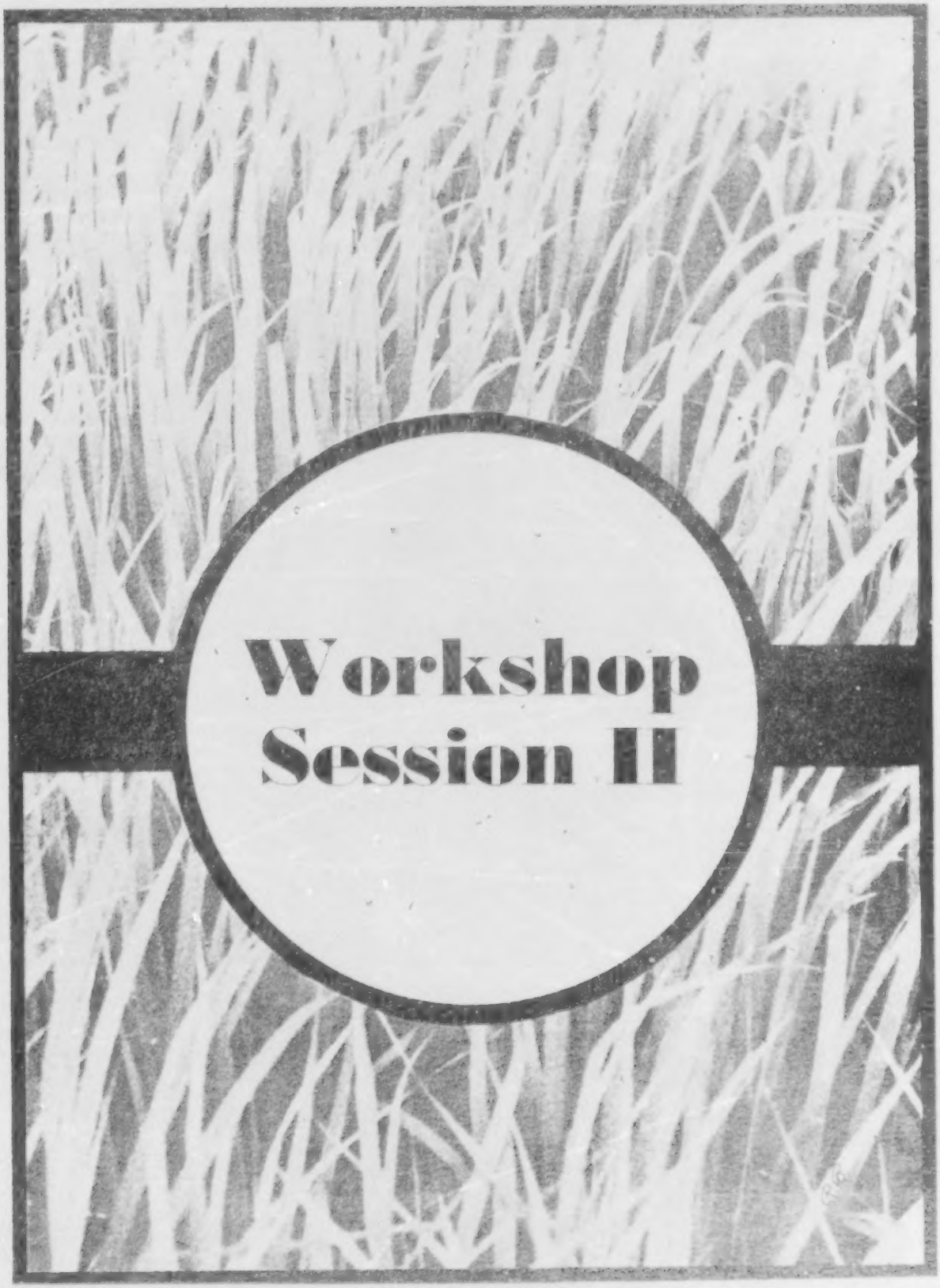
In order to solve the soil conservation problem, it is going to take many, many dollars and probably a long period of time. If we decide to set up priority for soil conservation practices on certain land, you can get a bigger impact as far as cleaning up the water. Now that is not necessarily a decision which will be made, but it is an option which is going to be available to decision makers.

Question: Will it be possible to implement decisions on a volunteer basis?

Crane: We hope to, for the most part. I think there are going to be some cases where mandates will have to be exercised. Not to the point of saying, "You can't grow corn in this particular tract of land", but——"If you are going to grow corn you have to use these practices to allow you to do it without exceeding the soil loss limits. If you are not willing to do this, then you have got to get into a rotation system or use a conservation tillage system or whatever it might be." I doubt the mandate will be that you can not grow a particular crop. I vision it as having some alternatives. This is one of the more difficult questions to be answered coming out of the planning process. The chairman of our Water Quality Commission is quoted as saying "mandatory soil conservation practices will be necessary."

There are a couple of things I would like to touch on that are going on in the point source area. We are, for really the first time, beginning to take a hard look at what is called residual waste disposal, which is a cleaned up version of talking about sludges, most municipal sewage treatment plant sludges and something from the industrial processes. We are finding that although the preponderance of these sludges are non-toxic there are a number of sludges with toxic chemicals, and it is probably going to take some considerable work in handling this. The control of these residuals is going to be a significant problem that will continue to haunt us for some period of time.

Another aspect in which I have a great deal of hope that we will come up with a successful program, is taking place in the Fort Dodge area. It involves the MIDAS Council of Governments. It is a five or six county area and they are in the process of developing an area wide operating and maintenance agency for all of the local sewage treatment plants. This includes lagoons and regular mechanical sewage treatment plants. During the time frame here, they will just bring that to an implementation stage. There are no funds available to implement this kind of an agency. They also are looking into having a single laboratory that would be available to all the members of that agency. There may be at some time in the future. We would anticipate that type of agency would have an economic advantage to the local governments involved.


Workshop
Session II

WORKSHOP SESSION SELECTION

A. Water resources: use without abuse.

B. Land use implications for the individual, society, and the environment.

C. Natural resources: interrelationship between use, exploitation, and a quality environment.

D. Conservation/environmental education for all sectors of society.

E. How can education keep top soil where it belongs?

F. Open space acquisition: implications for the individual, the society, and the environment.

G. The role of organizations in conservation/environmental education.

H. Energy: the relationship to conservation, the environment, and human needs.

I. How can awareness be turned into action?

J. Citizen rights and responsibilities in conservation/environmental decision making.

K. The impact of life styles on conservation and the environment.

L. Air quality: limit to health—limit to wealth.

M. The educator's responsibility to the environment.

N. Education's role in the urban environment.

O. Population implications for the individual society and the environment.

A. Water resources: use without abuse

Focus Question: What problems in water resources management in Iowa require public awareness and understanding?

Chairpersons: Jim Cooper, Margo Underwood, Wayne Merkley

Participants:

Thomas C. Bruegger	Rollin Swank	Bryce Harthoorn
John A. Miranowski	Leigh Curran	Milo Sampson
Richard S. Gustafson	Dr. Stanley Grant	Dr. Walter De Kock
George Woods	Ted Lewis	Marilyn Haynes
Hugh Templeton	Doug Getter	Harold Anderson
Dr. Merwin Dougal	Lauren Soth	Tom Ludwig
Russell Pearson	Paula Shirley	Sam Townsend
Curt Sorteberg	Donna Bullock	

Importance of the Issue Area:

If Iowa is to maintain a dynamic society, healthy economy, and a generally desirable area to live, then the importance of water resources cannot be over-emphasized. The importance of water resources ranks with land use and soil conservation.

Major Recommendations:

1. **Development of a water plan for the State of Iowa.** To make the plan dynamic, its development should involve public awareness and provide for public input during its preparation. The development of a state water plan should be a priority of the Iowa General Assembly and of affected state agencies. One agency should be selected as spokesperson for the water plan. Other agencies should retain expertise in specific areas. The plan should identify priorities for water use including a concern for quality, as well as quantity, and the possible marketing of water. The plan should include incentives for enforcement and implementation.

2. **Water pollution control for non-point source pollution including; agricultural, urban-rural residential, transportation, and construction sources.** A committee comprised of members from the existing resource agencies and educational institutions should be formed to gather and review accurate, reliable information on non-point pollution. The committee should be responsible for releasing information to the media including news releases and television documentaries. An ad hoc committee should be created to receive information and to develop goals and deadlines for delivering information to their respective organizations.

   This committee should represent labor, corporations, chambers of commerce, senior citizens, youth, etc. The responsibility of this ad hoc committee shall be to determine the best techniques to be applied in understanding problems and alternative solutions.

3. **Develop an understanding of the problems associated with the management of water resources of the state of Iowa.** An educational program through local public interest groups, existing state resource agencies, educational and research institutions should be undertaken which discusses options of water resource use. Communication media would be a part of this effort. A monitoring system for water use from both ground and surface water sources is desirable. Public costs and feasibility of use of private funds in developing the efficient utilization of water resources needs to be determined. Areas of water resources research should be pursued. Consideration should be given to increasing agency services and coordination. The Governor's Committee on Outdoor Resources should consider holding meetings relating to the Iowa water resources situation for communications media and all educational institutional levels.

Other Recommendations of Small Groups:

Besides the three general recommendations selected as the most important by the workshop as a whole, the following are major recommendations developed within the three individual work groups:

1. Allocation of ground water among competing uses was identified as an important aspect of the present water permit system. It was suggested that an advisory committee to existing ground water regulatory agencies be formed which would be dissolved after serving its useful purpose. Consideration should be given to issuing water permits by a district or regional based agency.

2. It was felt that better public awareness was needed of existing water resource programs, policies, laws, and other institutional arrangements. Improved accessibility to the operations of agencies, boards, etc. involved in the management and regulation of water resources could be achieved through holding evening meetings, holding meetings around the state, holding the meetings at reasonably frequent intervals giving adequate advanced public notice, and keeping the news media advised of agency actions and activities.

3. The water resource regulatory agencies and boards should assess current water needs and supplies, and consider current and long-term use priorities. Allocation of water should be based on both current and long-term use and reflect the priorities established.

4. Lack of funding to deal with the state's water resources was cited as a problem. Initial public support is needed to increase funding for water resources related research, for services related to the competent and continued management of the state's Water Resources, and for the timely control and enforcement of water resource regulation.

5. Sources of funding for the desired water resource programs could be: through initiation of a user charge for irrigation and industrial use of water; through taxation of public water use; through selling of water rights to the private sector of the general public; and through the pursuit of federal funds.

6. The state water resources program is to serve the public; therefore, public support is the key to funding and overall successful management.

Other Top Problem Areas:

1. Control of soil erosion in Iowa.

2. Management of recreational and agricultural use of Iowa streams.

3. Protection of potable water supplies.

4. Control of point source pollution.

5. Prevention of removal of existing conservation practices.

6. Providing cooling water for power plants.

7. Pollution of water with chemicals.

8. Flooding—flood plain management.

Summary:

The major problem of water resource management identified was the need for development of a state water plan. Concern was given to public participation in the development of a plan and need to inform the public for participation in water resource planning. Emphasis was given to the participation of state agencies in planning and development of an information program.

B. Land use implications for the individual, society, and the environment

Focus Question: What are some problems in land use management that are amenable to public action?

Chairpersons: Frank Schaller, Louise Moon, David McCalley

Participants:

Filip Ghinea	Joseph Larken	John Bowles
Helen Harris	Margaret Rawland	George Thompson
Carroll Hobson	William Brune	Vivian Creswick
Howard Johnson	Marian Pike	Martha Ulrich
Muriel Nicholson	Clifford Stille	Nancy Lundstrom
Mary Ellen Ordal	Janet Steen	

Importance of the Issue Area:

Iowa is located in the heart of the greatest crop and livestock production area of the world. Its land is blessed with productive soil and favorable weather. Products of the land are the key part of the employment and wealth of the state. Meeting the needs of Iowa citizens and making a significant contribution to the world's supply of food now and in the future depends upon best use and protection of this valuable and finite resource.

Major Recommendations:

1. **The general public must be informed and educated.** The importance of preserving prime farmland and curbing urban sprawl should be emphasized through use of all forms of media, civic organizations, service clubs, schools, etc.

2. **Municipal services should determine industrial siting.** The public should be involved through public hearings and through participation in land management programs at all levels of government.

3. **Continue a strong educational program in elementary, secondary, and adult education.** Emphasis should be given to improvement of teacher education through programs similar to the Iowa Teachers Conservation Camp conducted by the University of Northern Iowa, and increased emphasis by the Department of Public Instruction. A stronger national education emphasis should be encouraged and more student activity should be conducted in outdoor classrooms. Adult education programs should be developed and supported. Programs should be provided for service clubs, church groups, farm organizations, and others.

   Increased time and space in newspapers, radio, and television should be devoted to land use management topics. A "Save Iowa Farmland Year" should be declared by the Governor and a program developed using such activities as:

   Billboard advertising and other publicity
   Use of conservation/environmental themes for county fairs and the state fair
   Revitalization of local and statewide field days
   Hold hearings and debates on appropriate issues

4. **The leadership necessary to accomplish environmental needs must be defined and supported.** Organizations of all kinds, including industry, should be encouraged to assign a leader or contact person for environmental education and a list of current leaders from all organizations should be developed. Recognition of organizations and industry should be given for outstanding efforts (through the governor's office).

Other Recommendations of the Small Groups:

In addition to the four general recommendations, the following major recommendations were developed by the three individual work groups.

1. Passage of a land use bill for Iowa with emphasis on local control in implementation should be encouraged.

2. A public advisory committee to supply inputs to policy and enforcement bodies should be established.

3. People should be informed of current laws, how they are helping and/or hindering, and their strong and weak points.

4. An understanding of how and why conflicts exist should be developed to show that compromise and trade offs are necessary to achieve effective land use and environmental protection in both the long and short term. Recognition should be given to the differences between idealism and economic fact and that incentives and compensation are necessary to resolve conflicts of interest. Voluntary efforts should be maximized in resolving conflicts and achieving desired outcomes, but some mix of voluntarism and compulsion appears necessary.

5. Adult education should be developed at locations where adults are naturally found——shopping centers, state and local fairs, etc. Organizations such as the Extension Service, League of Women Voters, 4-H, Future Farmers of America, Farm Bureau, Regional Planners, etc. should be invited to develop professional information booths for the adult education areas.

Other Top Problem Areas:

1. Public services for municipalities——Who is responsible for these services?
2. Coordination of local, state, and national needs.
3. Support of agencies developing research in conservation.
4. 208 planning.
5. Commercial uses versus recreational/open space uses.
6. Voluntary versus mandatory methods of land use planning.
7. Who will control or manage the land use plan?
8. Revision of allotments based on proper land use.
9. Speculative lands on the edge of urban areas.
10. Trade offs between different land use needs.
11. Control of water use.
12. Development of a land ethic.
13. Economic factors involved in conservation.
14. Soil conservation controls and chemical usage.
15. Farm earnings increased to match industry.
16. Can we make judgments without standard soil surveys?
17. Determination of the extent of federal control.
18. Does the general public have enough information for good legislative judgment?
19. "This is my land and I will do with it what I please."
20. Economics of conservation.
21. Show people how individual action results in land use changes.
22. Develop taxing and loaning to allow for long-range development.

Summary:

Public action on land use management requires an informed and educated public that understands the importance of finding a balance between preserving prime farmland, mineral and aggregate needs, and curbing urban sprawl. Through use of elementary, secondary and adult education and the media, the public should be prepared to participate in land use management decisions. A first priority is passage of workable land use legislation.

C. Natural Resources: interrelationship between use, exploitation, and a quality environment

Focus Question: What are some problems in natural resource management that are amenable to public action?

Chairpersons: Roger Landers, Max Schnepf, Charles Miller

Participants:

Mrs. E. G. Franke	D. Louis Finsand	Bill Brabham
Beverly Groos	Erwin J. J. Koos	Frank Collins
Jerald R. Barnard	Jean Prior	Sturda Hinds
Jim Ellerhoff	Dan Lindquist	William Desmarais
Sylvan Runkel	Bill Farris	David Drake
		William Greiners

Importance of the Issue Area:

Because of natural resource limitations, it is imperative that man weigh carefully his use of the land and related natural resources in meeting society's needs for food and fiber production, living space (highway, urban, and commercial uses), and recreational areas.

Major Recommendations:

1. **A mechanism should be instituted on the state level to assess the environmental and economic impacts of governmental decisions--both short-term and long-term.** The purpose of this mechanism should be to educate the public and decision makers. It should include innovative use of public media to create an awareness of natural resource problems and management alternatives.

2. **Natural resources management principles must be integrated into the public school curriculum.** This will require a strong teacher training program--requisite to graduation at the college level and mandatory as an in-service activity for teachers already in the profession. The program should include an outdoor classroom as a part of every public school site, and Youth Conservation Corps-type or Outward Bound-type experience within the public school system.

3. **Extension programs should concentrate on making city and county officials (planning commissioners, planning and zoning commission members, etc.) aware of how to use natural resources wisely in meeting society's needs (food and fiber production, living space, recreation, etc.).** Research in natural resources must be promoted to identify problems and provide the basis for these environmental education programs.

Other Recommendations of Small Groups:

In addition to the general recommendations, three work groups made the following major recommendations:

1. Use the existing Inter-Agency Resource Council as a leadership committee to identify and catalog natural resource issues, uses and limitations, and to draft policy recommendations.

2. Funding of effective actions at all levels is needed.

3. Determination of priorities regarding the use of natural resources--uses must be defined first and priorities established second.

4. An emphasis upon stress or simulated stress situations in the educational process may provide insights into problems and promote wise decisions.

5. Make innovative use of public media to create an awareness of natural resource problems and management alternatives.

6. Incentives should be provided for application of wise resource use--grants, tax credits, cost-sharing, low interest loans (regarding soil, solar energy, recycling, etc).

Other Top Problem Areas:

1. What incentives are available to induce farmers to participate in natural resource conservation practices beyond those that are economically efficient within their individual enterprises?

2. Protection of natural and unique areas for use, for study, for research and education, and for the protection of the natural support system needed for man's survival.

3. The return of man to living in harmony with the natural order.

4. The lack of awareness of non-economic values of natural resources.

5. Convincing the public that they can manage environmental resources.

6. Lack of school administration acceptance and support for environmental education.

7. How to determine priorities of resource use. For example, should natural gas be used for home heating, industrial use, grain drying, or nitrogen-fertilizer? Who decides?

8. Confidence in public officials and industrial leaders is at an all time low or just emerging from an all time low.

Summary:

A major concern of resource management is the knowledge of the public and of governmental leaders of resource management principles. There is a need for educational efforts through both the public schools and mass media to develop a knowledge of these principles. Mechanisms should be instituted to assess the environmental and economic impacts of governmental decisions. In some cases governmental action may be needed to provide economic incentives for wise resource use and conservation.

D. Conservation/environmental education for all sectors of society

Focus Question: What are some problems in providing environmental/conservation education for all sectors of society?

Chairpersons: Robert Rye, Dale Brentnall, Larry Benne

Participants:

Jolene Witte	Chuck Bardonner	Bob Vanden Branden
Curtis Powell	Arnold Haugen	Bob Walton
Douglas Schoomer	Corwyn Hicks	Debra McRae
Tom Budnick	M. A. Delchow	Donald Roeders

Importance of the Issue Area:

Environmental education is a major area of responsibility for developing the awareness and knowledge necessary to meet the environmental/conservation needs of Iowa.

Major Recommendations:

1. **Different types and levels of environmental education are needed to bring about a behavioral change and a change in philosophy in the schools and the general public.** Environmental education needs to be multidisciplinary, a lifelong process, and credible. A delegation of responsibility for environmental education for various sectors is necessary and a well-defined, adaptable, credible curricula for environmental education should be established. Resource materials fitting the sprectrum from pre-school to the elderly should be provided. A system should be determined that can best deliver and incorporate environmental education into the formal (academic) and informal (non-academic) areas of education. The "science," the political-ethical decision making and the attitude building approaches should be required in environmental education. Finally, a mandate should be given to the Department of Public Instruction that provides the power to require each building in kindergarten through adult education operating with state support to have an environmental education plan. The plan must identify what is being done in current programs in each department.

2. **A national environmental needs assessment is needed.** The needs assessment should develop and disseminate a credible, consistent definition of the problems and alternatives facing society.

Other Recommendations of the Small Groups:

In addition to the two general recommendations, the work groups made the following recommendations:

1. Any action taken must bring about appropriate immediate and long-range results.

2. A statewide advisory group for environmental education should be formed with the responsibility for developing objectives and a state plan.

3. An environmental education studies program should be implemented at the district level, overseen by an environmental education coordinator. All of the district programs should be overseen by the Department of Public Instruction.

4. Continuing education of teachers should be accomplished through in-service workshops and/or college credit courses.

5. Like physical education, environmental education should receive mandated time per week in the curriculum to be administered through a variety of disciplines including social studies, English, mathematics, biology, health, chemistry, etc. stressing the interdisciplinary nature of environmental problems.

6. Source materials, such as texts, should be sought which include environmental topics.

7. Mass media would be an effective tool for implementation.

8. Different types and levels of environmental education are needed to reach different sectors of society.

9. Development of a set of goals both state and locally through public input and/or interaction.

10. Development of a series of guidelines based on educational studies as to what methods are effective for different levels.

11. Mass media communication to public through T.V. Guide type publication on broadcasts of state and local environmental education programming available.

12. Economic factors of consumption versus conservation.

Other Top Problem Areas:

1. Citizen dedication.

2. Should environmental education be voluntary or mandatory?

3. Making environmental education affordable in time and money.

4. Fear of being identified with the issues.

5. Exposure of people to the outdoors.

6. Getting immediate results.

7. Getting people to participate.

8. Someone or identified persons at every level of educational effort by business, associations, organizations, or institutions should be appointed and held responsible to see that all educational efforts are accountable.

9. Different types and levels of environmental education are needed to reach different sectors of society.

10. Environmental education and conservation education are not the same.

11. Basic scientific-factual concepts are lacking in the general public.

12. A lack of resources to provide conservation/environmental education to the public--facilities, funding, personnel etc.

Summary:

The major concern in providing environmental/conservation education to all sectors of society is the organization necessary to provide educational experiences that will change behaviors and philosophies at all levels from preschool through adult. Recognition and implementation of environmental education as a multidisciplinary area is needed before progress can be made in providing the education needed. Major emphasis should be given to the development of a delivery system for environmental education in both the formal and informal areas of education.

E. How can education keep topsoil where it belongs?

Focus Question: What are some problems in soil management that are amenable to public action?

Chairpersons: Ken Tow, Min Amemiya, Charles McLaughlin

Participants:

Walter Hagen	Bob King	Ruth Swanson
Dorothy Heine	Pam Poggensee	Avon Jones
Don Erbach	Tom Kenny	Leslie C. Klink
Jean Williams	Lawrence Blunk	Wendy Meyer
Lynn Betts	John Holt	Ken Benda
Don Freeman	Barbara Phillips	

Importance of the Issue Area:

To date education has been a major aspect of soil conservation programs. In the future it will take on added significance, both from the standpoint of enlisting voluntary cooperation in soil conservation programs and in light of the need for greater awareness on the part of the general public who provide support for such programs.

While not as visible, today's soil erosion problems are just as severe as those out of the 1930's. The problem is further complicated by a call for all-out agricultural production while the environmental movement has simultaneously created concern for other forms of resource use that are integrally related to the soil resource.

Major Recommendations:

1. **Develop a land ethic among all Iowans.** (a) Area education agencies should be encouraged to become actively involved in environmental education programs. (b) More active coordination and cooperation among county conservation boards, soil conservation districts, county extension services, and other local groups in the promotion of soil conservation activities should be encouraged.

2. **The public should be educated to support economic incentives for the use of soil conservation practices.** The long-term advantages of soil conservation practices for society should be publicized and the consequences of all-out agricultural production efforts should be emphasized. The alternatives to not practicing soil conservation should be evaluated.

3. **Accelerate the research, development, promotion, and adoption of soil conservation systems.**

   a. Hold field demonstrations.

   b. Gain peer acceptance.

   c. Increase economic incentives.

Other Recommendations of the Small Groups:

In addition to the three general recommendations, the three work groups developed the following major recommendations:

1. Pass legislation to provide incentives for proper soil erosion control and better utilize existing legislation.

2. Encourage through promotions and educational programs, the establishment of permanent soil conservation practices such as terraces, tree planting, etc.

3. Authorize educational research to determine how we can more effectively gain implementation and use of available soil conservation technology and methods.

4. Strive to achieve peer acceptance of soil conservation techniques among land users by enlisting the assistance of farm organizations, conservation groups, etc.

5. Instill a land ethic among the citizens of the state, starting in the school systems, as part of an effort to gain an awareness of and appreciation for the need for sound soil conservation programs.

6. Provide tax incentives for implementing erosion control measures, maintain viable livestock industry so as to not force marginal pasture lands into row-crop production, and place part of the responsibility for conservation costs on the consumer.

7. Development of a land use policy to control urban sprawl, to control soil loss from highway, utility, and other construction areas.

8. Promote conservation education through schools, churches, service clubs, civic organizations, adult education, news media, and trade organizations.

9. Give each area education agency the responsibility for promoting teacher training workshops and curriculum designed to enhance soil stewardship. Topics of concern should include erosion control, urban sprawl, fertilizer and pesticide usage, and recreational vehicle operation.

10. Develop a recommended scope and sequence, K--12, environmental/conservation education programs with a survey instrument to assess student knowledge.

11. Field days should be developed to display good farming techniques and to provide economic data, when possible, for each technique. Techniques to be demonstrated should include, but not be limited to:

    a. Tillage programs.
    b. Fertilizer applications.
    c. Herbicide usage.
    d. Wind control.
    e. Water run off controls.
    f. Feedlot waste control and usage.

Other Top Problem Areas:

1. Energy allocation
2. Urban sprawl.
3. Government involvement.
4. Water.
5. Agricultural chemicals.
6. Production versus conservation goals.
7. The concept of public versus private policy decision rights regarding land.
8. Intensive farming of unsuitable lands.
9. Lack of rehabilitation of mined areas.
10. Recognize that non-point pollution is a problem that affects the quality of life for both urban and rural dwellers.
11. Failure to fully protect areas disturbed for construction, road building, and strip mining.
12. Lack of research.
13. Need for public oversight of road construction activities.
14. Need to fund Iowa's Conservancy Districts.

Summary:

Education of the public to develop an understanding of land use conservation practices and land use ethic is the prime action needed to solve problems in soil management. With increased education, public support can be developed for the economic incentives necessary to implement soil conservation practices and to reduce the intensive farming of marginal areas now practiced. Increased research in soil conservation and increased demonstration of the economic advantages of conservation practices are needed to assist the educational program.

F. Open space acquisition: Implications for the individual, the society, and the environment

Focus Question: What are some problems in open space acquisition that are amenable to public action?

Chairpersons: James Sinatra, Charles Gratto, Carolyn Lumbard

Participants:

Mildred Grimes	Clifford M. Naser	James Kessler
Dorothy Baringer	Sharon Elain Goff	Fred Priewert
Nicholas Hartwig	Doyle D. Adams	Bob Engelmann
Steven Anderson	Darlene Frazier	Edward L. Kozicky
Thomas Bates	Dean Roosa	Reg Kubichek

Importance of the Issue Area:

As education about the values of open spaces goes on, so must the acquisition and preservation of rare and natural areas. The activities and sites should lead toward greater sensitivity to the values signified by nature.

Major Recommendations:

1. **We should educate in the values and purposes of open space in Iowa** by means of open space opportunities, by participation in adult education, industry, church groups, civic organizations, conferences, and media; and by involvement in open space benefits which are the passing on of an environmental heritage and providing options to future generations.

2. **The state, through the Department of Public Instruction, should require an environmental education program** that includes open spaces as part of the K—14 curriculum. Instruction in such a program should be conducted by certified environmental education teachers.

3. **More government and private programs should be encouraged.** Examples are the Youth Conservation Corps, the Izaak Walton League chapters, adult education courses, and the Governor's Conference on Environmental/Conservation Education.

4. **Professional quality radio, TV, and printed material should be developed on the purposes for open space.** All outlets should be utilized including the Iowa Public Broadcasting Network, commercial station spots, short programs and articles. Locally generated educational activities should include field trips, service clubs, mini-courses, and church groups.

Other Recommendations of the Small Groups:

In addition to the general recommendations, the work groups made the following major recommendations:

1. Make open space opportunities available through continued funding by means of a specified tax, organization support, and an inventory/assessment of existing features and needs.

2. Provide education on the health and heritage of the ecosystem by interpretation.

3. Create a sense of ownership through planning and citizen involvement.

4. Immediately inventory existing open space to assist in appropriate land use legislation and continued funding of Open Spaces Act.

5. Provide specific environmental awareness activities involving adults through cooperation of industry, educators, and other community groups.

6. Teach the concept that man's land use decisions will be the single most important determiner in shaping Iowa's future.

7. Written interpretation of existing open space areas is very important. People arrive on an area and know nothing about what is on the area.

8. Educate the media to the importance and value of open spaces. TV specials should cover political, economical, and environmental aspects of current events.

9. There is a need for practical vehicles for public participation in planning, acquiring, and maintaining open spaces.

Summary:

Public education in the value and purposes of open spaces needs to be encouraged and promoted. The public also should be involved in assessing present needs and features of open spaces, and in the planning of further open space acquisition. Two immediate concerns are the inventory of existing open spaces and the continued funding of the Open Spaces Act.

G. The role of organizations in conservation/environmental education

Focus Question: What are some problems in helping service organizations become aware of their roles in conservation/environmental education?

Chairpersons: Dave Fagle, Kay Sonksen, and Lee Dallager

Participants:

Betsy Lyman	Donna Smithson	Mary Duritsa
Don Dellgel	Maynard Munson	Harold R. Robb
Tom Pritchard	Doyle McCully	Ron Harshman
David Baumann	Marty Hock	Linda Nicholson
Teri Williams	Sue Stein	Bob Russell
		Larry Davis

Importance of the Issue Area:

It is important that all organizations related to conservation and environmental education seek quality information that will help them activate their role as leaders in disseminating information to all people in the public sector. It is logical that a clearinghouse be established for efficient collection and distribution of information. Whatever program that is developed must function first at the local level and finally at a regional or state level. A system must be designed and developed to fund such a clearinghouse or executive director's office. At least a library of resources could be established.

Major Recommendations:

1. **Provide information to all organizations about conservation/environmental education** through designated individuals at the local level or through boards that operate at three levels (local, regional, and state).

2. **Assistance should be provided in acquiring funding for organizational** operations through directions for processing resources and funds, and by providing a plan for division of responsibilities.

3. **Communication between organizations should be assisted** by establishing a clearinghouse to collect and disseminate information.

Other Recommendations of the Small Groups:

In addition to the three general recommendations, the following major recommendations were made by the work groups:

1. Convince all organizations that conservation/environmental education is a priority and their responsibility.

   a. Designate an individual or individuals whose responsibility is to create awareness at local levels by direct contact with community organizations.
   b. Use the Nominal Group Technique with local community organizations so that they become involved in the solution of the problems.

2. Provide reliable information and keep people informed due to the rapidly changing information.

   a. Clearinghouse concept--informal group of individuals who consolidate information and make it available for dissemination.
   b. Develop a regular newsletter which is a bibliography of information available to all organizations.

3. Knowledge of environmental education needs and setting basic objectives as to how to fulfill those needs within their local community.

4. Create an awareness of conservation and environmental education in organizations by providing continuous, credible information, reviews and educational materials through related agencies, organizations, and groups, and by providing directions for dissemination. Two possible solutions are: (a)

designate an individual(s) whose job is to create awareness using such methods as the Nominal Group Technique at local levels by direct contact with community organizations, or (b) set-up boards at these levels (local, regional, state) similar to the Iowa Conservation Education Council pattern (ICEC is a non-political action group made up of individuals from many different organizations).

5. Funding for programs can be established by: (a) providing directions for procuring resources and funding, and (b) provide a plan for division of responsibilities among participating member organizations.

6. To provide reliable information in a changing society it is recommended that a clearinghouse to collect and organize related conservation/environmental education information be established with two possible approaches:

   a. An individual could be designated to establish the clearinghouse via an executive director's office, or,

   b. The clearinghouse could be a coordinated effort between agencies, establishing a state, regional, or local library of information.

Other Top Problem Areas:

1. Problems involving diverse community sectors.
2. Overlap of educational programs.
3. Organizations generally see only one side of a problem.
4. Inability to focus on one topic.
5. Communication problems in an organization and finding continued commitments.
6. Provisions are not made to train people.
7. Hierarchy of conservation/environmental education organizations.
8. Rights of individuals versus the rights of groups.
9. People power available to do the work for organizations.
10. Inadequate recognition of the past work of organizations.
11. Age to teach conservation/environmental education by organizations.
12. Government limits on organizations.
13. Fresh approach to media and materials organization for conservation/environmental education.

Summary:

Major problems in helping service organizations to become aware of their roles in conservation/environmental education are providing the organizations with organized, credible information and providing coordination of efforts between organizations. A clearinghouse for information in environmental/conservation education that functioned on the local, regional, and state level would be helpful in providing reliable information and coordination of efforts.

H. Energy: The relationship to conservation, the environment, and human needs

Focus Question: What are some opportunities and problems in energy resource management that are amenable to public action?

Chairpersons: Gene Young, Bill Schmidt, Gus Skovgard

Participants:

Shirley Rasmussen	Kathy Haberer	Loren L. McVey
Alice Carlson	Glen Eastherday	Mildred Barnes
Rod Riggs	Fred Dorheim	Kathy Davis
Merlin Iverson	Helen Crabb	Jane Magers
Ben Graham	Ruth C. Bakke	Bob Franklin
Susan Welch	Skip Laitner	Roger Swanson
C. V. Wright	Dorothy Liverwright	

Importance of the Issue Area:

The goal in this issue area is to develop a total conservation ethic that would include all aspects of conservation of energy use -- with attention to economics, total environmental costs, decision making on BTU efficiencies and stimulation of all energy sources while watching all impacts of such effects on the physical environment.

Major Recommendations:

1. **There is a need to develop credibility for the need of conservation of energy.** Credibility may be developed through the use of multiple resources of information, use of "now examples" from everyday life and current events, listing of uses of energy in daily life, illustrations of how energy is made available, and providing Energy IQ sheets for instructors.

2. **There is a need to change from a waste ethic to a conservation ethic.** A brick and mortar model can be used along with examples of positive and negative social pressures and values clarification congruence ("practice what you preach").

3. **There is a need to develop energy efficient and effective systems.** The systems developed should include energy options, appliance and building efficiency, and transportation.

4. **Demand national research and development,** and a national energy policy.

5. **Develop an awareness of a total conservation ethic dealing with all aspects of conservation,** including soils and land, water, production processes, elimination of waste, recycling and packaging.

6. **Stimulation of all energy sources** including solar, nuclear, coal, wind, etc. with close attention to the impact on our physical environment of the development of all sources.

7. **Emphasis on the examination** of life styles.

Other recommendations of the Small Groups:

In addition to the general recommendations, the following major recommendations were made by the small groups:

1. Need to establish decision making criteria in terms of BTU's rather than dollars.

2. Development of state energy legislation to meet the needs of the state (vehicle use, mass transit, building codes, and tax incentives).

3. Development of vastly expanded teaching materials, techniques, and new curriculum emphasizing conservation for all grades.

4. Enlist all organizations (public, social, labor, farm, etc.) to assist in the education of the public.

5. Use of the mass media, especially TV, to educate the public.

6. Develop mandatory energy workshops for educators, designed and controlled by the Department of Public Instruction but with input from many sources.

7. Utility companies should continue to provide leadership in educating the public to the advantages of addition of insulation, construction of energy efficient structures, appliance energy efficiency labeling, and techniques for use of solar energy.

8. Develop investigations of alternative housing styles (multiple housing units, underground homes, etc.).

9. Education should emphasize that some changes in life styles may be necessary, but that the changes need not decrease the enjoyment of life.

10. There is a need to develop a "conservation ethic" in people. The program must emphasize "doing," i.e. practical activities. It must proceed in small steps but be goal oriented.

11. Funding should be increased and funds redistributed for new technology.

12. Recycling and reuse should be promoted as energy concepts.

13. People should be sold on developing all energy sources.

How to Develop a Total School Energy Program as a Model for Community Action:

1. Energy oriented curriculum development.

2. Employer-employee training program:

   a. The program should include training for custodians, secretaries, etc. as well as workshops for faculty and administrators.
   b. The training should emphasize: building energy audits upgrading equipment transportation, use of nature (trees) as air conditioners and energy savers.

3. Translate effective savings into local news by emphasizing tax savings and energy savings techniques.

4. Coordinate with industry and experts to demonstrate new processes and product spin-offs to the community.

5. Use organizations in the community by working with them and through them to educate the public.

Other Top Problem Areas:

1. Strip mine reclamation.

2. Public involvement in energy decisions.

3. Insulation use.

4. Nuclear energy consideration.

5. Need for recycling.

6. Mass transit.

7. Hydropower.

8. Conservation in public buildings.

9. Cogeneration.

10. How to stimulate greater state and federal *research and development*:

    a. More public education involvement.
    b. Construction of demonstration units.
    c. Mobile in-service teaching labs provided by the Department of Public Instruction.
    d. Enlist experts to develop planned programs for adult education.
    e. Energy Policy Council to serve as the clearinghouse for data.

Summary:

Public action on energy resource management can be developed through a total education effort. A major concern of this education program should be development of the credibility of the need for conservation of energy. Emphasis in the program should be given to the stimulation of energy sources and the development of energy efficient systems that include energy options, and appliance, building, and transportation efficiency.

I. How can awareness be turned into action?

Focus Question: How can we motivate individuals to change their values and attitudes to insure fullest citizen participation in the development and practice of an environmental ethic?

Chairpersons: John Martin, Sue Baldwin, Don Menken

Participants:

Bob Bryant	Kappie Spencer	Virginia Peterson
Sheila Sidles	A. F. Canavan	Reverend Jim Osborn
Andrea Doubet	Keith Hanson	Betty Quigley
George Moser	Arthur Moellering	John Volker

Importance of the Issue Area:

Without an information base to be the foundation for awareness it is unlikely that constructive action will emerge. Once awareness is achieved, attitudes and values must begin a change process that results in action steps based upon an environmental ethic.

Major Recommendations:

1. **Establish environmental education programs for all age levels.** The program should be based on a personal approach with informal two way communication.

2. **Provide economic incentives and economic education.**

3. **Provide positive reinforcement to individuals, groups, and communities** that demonstrate an environmental ethic.

J. Citizen rights and responsibilities in conservation/environmental decision making

Focus Question: What are some problems in helping citizens recognize and exercise their rights and responsibilities in conservation/environmental decision making?

Chairpersons: Sue Wilson, Roberta Eide, Jim Curtis

Participants:

Carolyn Farrell	Harry Budd	Jolene Serratore
Donald Peterson	Dr. W. B. Hausler Jr.	Richard A. Eveleth
Lowen Anderson	Leland Smithson	Tom Shepherd
Bob Mumma	Dr. Robert B. Pratt	

Importance of the Issue Area:

It is necessary and important that citizens increase their rights, responsibilities, and effectiveness in the decision making process. Public officials must strive to foster citizen trust and to engender a spirit of accountability toward citizen participation in decision making. The citizen's feelings of apathy and mistrust that must be overcome are basic to the success of any program and are reflected in the following goal statements and recommendations.

Major Recommendations:

1. **To create interest among more people** by increased use of mass media, seminars, classes, and a speaker's bureau.

2. **To convince people of the need for citizens' rights and responsibilities in conservation/environmental decision making** by using the power of the pocketbook, voluntary and compulsory programs involving all individuals, industries, and utilities through government regulating agencies. In the area of children's educational programs, rules and regulations should be redefined regarding environmental education in schools. An emphasis should be placed on take-home activities.

3. **To give people access to correct facts** and provide easy access to them, there needs to be more research on the federal and state level. The Extension Service should be revitalized as the primary resource service on the local level. There should be an acceleration of educational efforts at all levels to promote knowledge and understanding of environmental problems. Public bodies and agencies should increase efforts to make information concerning specific problems more readily available. An example is the recently established Department of Environmental Quality News Information Line.

4. **To increase use of TV and radio to inform citizens** concerning their rights and responsibilities and how to be effective in the decision making process. Television and radio, as well as newspapers, should be used for official announcements of public body meetings and hearings.

5. **To establish a clearing house in the Department of Public Instruction** for information concerning methods for citizens to become a more effective participants in decision making.

Other Recommendations of the Small Groups:

In addition to the general recommendations, the following major recommendations were made by the work groups:

1. Need to help citizens separate rights and responsibilities.

2. Need more research on the broad federal level and on a more individualized state level to give people easy access to correct facts.

3. The Extension Service should serve as an agency to bring together, digest, and disseminate information.

4. There is a fundamental problem of apathy and distrust that must be overcome for citizen participation to be improved. In order to overcome citizen indifference both citizens and public bodies must take action.

5. Citizens need to increase their understanding of their rights and responsibilities and have to become more effective in their decision making process.

6. Public officials must strive to foster citizen trust and to engender a spirit of acceptability and accountability toward citizen participation.

7. Public agencies should make more extensive use of citizen's advisory councils for developing long range plans and objectives.

8. Public agencies should improve their techniques for helping citizens understand the rational basis for decisions.

Summary:

Citizen recognition of their rights and responsibilities in conservation/environmental decision making will be fostered by the creation of increased interest among more people through the use of mass media, public and adult education. The fundamental problem of apathy and mistrust among citizens must be overcome in the effort to increase citizen effectiveness in decision making. Public officials must bear major responsibility for developing trust and a spirit of acceptance toward citizen participation.

K. The impact of life styles on conservation and the environment

Focus Question: What are some problems in raising public awareness regarding certain life styles related to conservation and the environment?

Chairpersons: George Magrane, Curt Abdouch

Participants:

Sue Palmer	Janet Dozler	Gordon Fett
Doris W. Foell	Besty Hawtrey	Kathy Sibbel
Otto Tennant	Jerry Aldrich	Dee Engstrom
		Jay Sherman

Importance of the Issue Area:

The impact of life styles upon our environment is a result of years of habits which are now adding up to crisis levels. Conservation practices must be reflected in the way we live and hence it is the feeling of this group that the public must recognize this impact and the need to live compatibly with natural systems.

Major Recommendations:

1. **We must find ways to make the public aware of how our life styles have an impact on the environment.** Examples are the use of mass media illustrating good and bad life styles, and a reward mechanism to recognize people and organizations who model exemplary life styles.

2. **We must promote a feeling of stewardship** regarding aspects of the environment that transcend ownership.

3. **We must create an awareness of life style alternatives.** Pilot attempts at alternative life styles should be made by groups and communities.

Other Recommendations of the Small Groups:

In addition to the three general recommendations, the work groups made the following major recommendations:

1. Promote public awareness of the way our life styles affect the environment.

2. Promote change in our life style away from that of a disposable crisis oriented, unlimited consumption society.

3. Promote a change from a dependence on legislation to an emphasis upon education for personal decision making regarding life styles.

4. Public Awareness

   a. TV special on the "cost of convenience"
   b. Promote an understanding of the impact of our life style on the rest of the world through public education
   c. Elect model legislators and government officials
   d. Legislate awareness approaches
   e. Counteract fears of people about change
   f. Re-examine our economic system
   g. Alter curricula in schools to teach about life styles
   h. Conduct public workshops devoted to life styles
   i. Conduct business and industry workshops and training programs

5. Stewardship

   a. Legislate stewardship
   b. Encourage more imaginative use of public lands and/or buildings
   c. Institute a Governor's Award for Environmental Stewardship
   d. Question legal ownership and care of property
   e. Extend the environmental impact law to private interests and activities
   f. A year long program on stewardship conducted by the Public Affairs Institute of Iowa

6. Awareness of Life Style Alternatives

   a. Look at the "good life"
   b. Neighborhood meetings
   c. Public recognition of acceptable life styles
   d. Design experiences for people on alternative life styles
   e. Use industry training programs for the workers
   f. Promote cross-cultural experiences
   g. Contact religious organization to tune in life style in environment
   h. Create future scenarios for educational use

Other Top Problem Areas:

1. A mobile life style which uses high energy consumption for travel, recreation, and the "good life"

2. The **status quo** traditions which have an adverse effect on conservation and the environment

3. Lack of cooperation in a community sense because of our autonomous existence

4. Economic status reflected by material possessions

Summary:

Public awareness of the way life styles impact the environment must be developed. This development of awareness should be accompanied by experiences and education emphasizing alternative life styles, good and bad, and their impact upon the environment. Means should be developed to recognize and reinforce life styles that are less intensive in their impact on the environment.

L. Air quality: limit to health - limit to wealth

This workshop session was combined with others

M. The educator's responsibility to the environment

Focus Question: What are some problems in helping educators recognize their responsibility to the environment?

Chairpersons: Ross Iverson, Carolyn Benne, Barbara Koerber

Participants:

Brenda Sedlacek	John R. Vanden Branden	Melba Strickler
Linda Bjoinstad Martin	Elgin Allen	Richard Huber
Iva C. Gilbert	Frank Staus	Ray Wingate
David L. Cross	Lanny Zanatta	Wendell Phelps

Importance of the Issue Area:

Leadership in education trends and design has traditionally been directed by educators. As environmental issues exist, it behooves us to continue the role of responsible leadership. This role is two-fold: leadership in designing experiences in the formal setting of schools and living an environmental ethic in society.

Major Recommendations:

1. **Develop a good teacher in-service plan** for learning through involvement. In-service plans should be implemented at the individual district level, as well as at the Area Education Agency and state level. X-number of hours of hands-on environmental education should be required in pre-service training as a pre-requisite to receiving teacher certification. Define what constitutes adequate training and establish certification standards.

   a. Establish the goals of the training program.
   b. Determine the training model, involving as many sources as possible (universities, Area Education Agencies, Department of Public Instruction, etc.).
   c. Determine how to apply the training model to pre-service and in-service training for teachers and citizenry.
   d. Establish a time line for the training program.
   e. Develop continuous evaluation of the training model.

2. **Develop an informal program** to develop interest and enthusiasm and reduce anxiety in conducting environmental oriented activities.

3. **Environmental education should be included in individual** school district policies and goals. A list of concepts to be included in environmental education should be developed. The emphasis should be placed on developing the list of concepts and not upon determining how, when, or where the concepts should be taught. The latter are local options. A statewide objectives or plan should include:

   Summarize need for statewide plan.
   Determine how plan is to be developed and who will be involved in developing the plan; e.g. classroom teachers, business groups, community leaders.
   Establish budget and funding sources for development work.
   Determine a time line for development and implementation of a plan.
   Communicate the developed objectives to the school districts.
   Import a feeling of individual school district responsibility to the plan and solicit a working commitment from each.
   Structure and assemble a curriculum development committee.
   Develop program ideas and materials to facilitate obtaining individual objectives. Take care to allow for programs to adopt to special needs and/or resources of local communities.
   Make provisions for field testing.
   Assemble pilot teachers for a two-day conference to develop experiential awareness of the materials, secure commitment to utilize materials, determine a model or plan for implementation, and to develop an evaluation plan.
   After piloting, modify as necessary to establish an acceptable scope and sequence. The question of who the recipient audience of the instructional materials will be must be addressed (K--12 and citizenry).
   Implement a statewide in-service to put the plan into effect.

4. **Provide development and implementation funding**. Determine the need for funding for each part of the plan and establish a time line for funding needs; development of objectives, development of materials, piloting, evaluation, in-servicing and implementing state and local school boards, Area Education Agencies and County Conservation Boards should be the primary sources for funding.

Other Recommendations of the Small Groups:

In addition to the general recommendations, the following major recommendations were made by the work groups:

1. Develop an environmental ethic
   a. Need for common definition of "environment"
   b. Need in-service education providing board experiences.
   c. Need pre-service education with a multi-disciplinary approach, field experiences, statewide coordination, and certification endorsement for environmental education.
2. More emphasis should be given to environmental education in high schools and community colleges.
3. Experimentation with techniques to develop sensitivity and awareness should be encouraged.
4. Personal commitments to set personal examples should be developed. Ideas should be provided for ways to demonstrate commitments.
5. Individuals should volunteer for curriculum committees.
6. Time is needed to learn a new discipline, build the curriculum, get it approved, and to teach the curriculum.
7. State and federal grants are needed to help finance new programs.
8. Existing programs should be reorganized to provide time and money for environmental education.
9. Build upon programs already developed and look beyond areas traditionally associated with environmental education.
10. Incorporate community applications and involvement into the program.
11. The permanency of the environmental crisis should be emphasized.
12. More trained consultants are needed to help local schools. Knowledge people should be identified and a list disseminated.

Other Top Problem Areas:

1. Work in unfamiliar areas such as the affective domain
2. A lack of awareness by teacher preparation institutions
3. Lack of feeling of effectiveness
4. Indifference
5. Lack of educator awareness
6. Lack of willingness to become involved in or to support an environmental education program
7. Conflicting information in the media
8. A need to make friends with the media
9. Selecting and developing capable leaders

10. Need to relate objectives of environmental education to other educational objectives and goals

11. Getting educators to realize that the environment includes more than just outdoors

12. Lack of appreciation for political action

13. Need to encourage local government officials to take action on problem areas.

14. Realization that environmental education is not just another educational fad.

Summary:

There are two major recommendations for increasing the educator's responsibility to the environment. First, environmental education should become a routine part of teacher pre-service and in-service preparation. A state plan for environmental education is needed to encourage educators to recognize their responsibility to the environment. The state plan should be followed by the development of a commitment to environmental education in the policies and goals of individual school districts. The commitment at both the state and local levels should emphasize environmental education as part of the total curriculum and not limited to the traditional areas where environmental/conservation education has been taught.

N. Education's role in the urban environment

Focus Question: What are some environmental problems in the urban environment that are amenable to educational action?

Chairperson: John D. Gunter

Participants: (No list provided)

Importance of the Issue Area:

We propose the development of a commitment by our educational system and citizenry to generate an urban ethic; an appreciation and involvement in the creation of an understanding of the urban environment as an ecological and political system, and its relationship and importance to the total ecological and political system in Iowa.

Major Recommendations:

The environmental problems of the urban area may be addressed through ecological, political, and value systems. A proposed multi-faceted strategy includes a media campaign and a curricular component. Inherent in the approach is the recognition of the importance of changing present values.

1. **The environmental problem of the urban area may be addressed through ecological, political and value systems.**

   Ecological
   - Land use
   - Air and water quality
   - Utility waste

   Political
   - Transportation
   - Enforcement
   - Politics of environmental control

   Values
   - Desire for super beauty
   - Urban blight
   - Responsible urban commitment

2. **A multi-media campaign should be developed** which is directed at public school and adult education and which includes films, slide-tapes presentations, radio, and TV spots. The media component should be funded by the General Assembly and conducted by the Iowa Public Broadcasting Network, the Department of Public Instruction, universities, local school districts, local chambers of commerce, etc.

3. **A curriculum component should be developed** which includes a curriculum packet for the public schools, a short course for adult education, and an in-service program for teachers. The curriculum component should be funded by the General Assembly and include a writing workshop composed of urban teachers and other uban leaders. The workshops should be coordinated by the Department of Public Instruction and should create basic guideline materials. Mini-courses should be developed for adult education and offered through the Extension Service. Cooperative funding from the Department of Public Instruction, local school districts, municipalities and area education agencies should be used for in-service in urban areas. The in-service workshops should include experiential and cognitive learning activities.

4. **The above approaches should be designed to be cognizant of the role of values in urban environmental decisions** and the necessity to change present attitudes if the issues are to be addressed adequately.

Other Top Problem Areas:

1. Solid waste management
2. Population concentrated in specific areas
3. Ambient air quality
4. Waste of water, gas and electricity
5. Transportation
6. Dilapidated and decaying areas
7. Proper land use
8. Urban blight
9. Lack of space and privacy
10. Water quality
11. Cost of enforcement
12. Noise, visual, and ordor problems
13. Politics of environmental control
14. Short sightedness in urban environmental control
15. Responsible urban commitment by the population
16. Vector control
17. Misuse of chemicals
18. Apathy
19. Recreation
20. Vandalism and its physical products
21. Suitable housing
22. Isolation of urban residents from their natural environment
23. Multiple housing
24. Dispersion of the ethnic subcultures by major development
25. Cement cities
26. Placement and maintenance of government service centers
27. Flood plain management

O. Population implications for the individual, society, and the environment

Focus Question: What are some problems in population dynamics that are amenable to public action?

Chairperson: Paul Joslin

Participants:

Jody Cosson
Pete Getz
Ed Hatcher
Prudy Leachman
Marilyn Sand
George Skadron

Importance of the Issue Area:

Total world population and its distribution are major problems which affect Iowa. Any increase in population puts additional stresses on the ecosystems in which the increase occurs. Iowa's ecosystems are, and shall be, affected by population increase, whether by natural increase or immigration. Worldwide population increase affects Iowa in these ways:

1. Pressure to produce more food for export with loss of soil fertility by nutrient export, soil mass by erosion, and loss of trees, grass cover, and open spaces for wildlife and human recreation.

2. Increased import of fuel with resultant increase in air pollution.

3. Increased use of pesticides, herbicides, fungicides, and resultant increases in soil, air, and water pollution.

Increased import of fuel, machinery, and other goods and increased export of foods produces greater international interdependency. This produces new types of problems and variations of the problems noted above.

Major Recommendations:

1. **Children must be taught about their place in natural and artificial ecosystems.** Mandatory education should be provided in the following areas (listed by priority):

   - o natural laws of environment, ecology, and conservation
   - o the present human condition and the quality of life worldwide
   - o food, health, and nutrition

2. **A shift in educational programs to affective domains and to "holistic" approaches where possible**; to the consideration of real, rather than vicarious problems. Teaching about the environment must have a very high priority and can easily be integrated with the basic parts of the curriculum -- reading, language arts, social studies, science, and mathematics.

3. **Direct legislative actions** on land use, waste recycling, and conservation of soil, water, air, and energy.

4. **The following mandatory public actions are recommended with appropriate legislation as needed:**

   - o land use planning
   - o waste recycling
   - o soil conservation
   - o Energy conservation

Summary:

The quality of human life in Iowa is generally good at present but is threatened by population increases in the United States and the world. Thus, discussion of population in Iowa centers upon secondary problems rather than on direct problems of starvation, disease, war, and plague.

CLOSING

Ben Clausen is an associate professor of biology and director of Iowa Teachers Conservation Camp at the University of Northern Iowa.

I don't think I have ever been with a bunch of people I have been more proud to be working with than this group. I have seen the same technique used elsewhere, and no way did they come anywhere near the quality of production that you folks did. Thank you so very much. It's made our job as summarizers and rapporteurs a lot easier.

Now I know very well that some people who have pride of authorship in particular items or words may be somewhat dissappointed, but I have attempted to summarize a few things.

The one common thing I found was that there must be a recognition and acceptance of the importance of changing present values. This came from a lot of different angles. Such values as this: We need a change from unlimited consumption to reduced consumption. From big is good to small is better. From dollars to BTU's. From individual rights to stewardship regarding those aspects of the environment that transcend ownership.

In various groups I heard an indictment of agencies, organizations, schools, including the colleges and universities. Count one of the indictment was a failure to provide adequate and accurate factual bases for public understanding of the alternatives, which are possible, so that the public can be aware of the total impact. Count two of the indictment was a failure to seek public assistance and participation in decision making. Count three of this indictment, failure to listen to the response of the public. A number of other indictments were also made as the groups were trying to identify problems. Several groups were concerned about social and economic reprisals which might be taken against individuals for taking environmental positions and trying to live environmentally responsible life styles. A plea was made for a clearer definition of environmental responsibility, a definition which was based on facts as best they could be developed.

The implementations will warrant some very careful study and anaylsis. You came up with a host of excellent ideas that need to be pulled out and grouped as we develop the proceedings. Here are some of the highlights from the implementations.

There was a suggested concentration upon development of leadership which will recognize environmental values, adopt environmentally acceptable life styles, insist upon adequate discussion of various impacts of alternative solutions. Teachers were identified as one of the key leadership groups as Area Education Agency personnel as leaders to reach the teachers, as groups which need to understand the environmental decision making process and the necessity for making some of the trade-offs, greater involvement of the mass media in explaining rights and responsibilities to citizens and how to make inputs. A suggestion was made to establish a clearinghouse for information on how citizens can become more effective participants. Another suggestion was to provide positive reinforcement to individuals, groups, and communities that demonstrate an environmental ethic. We seem to be over emphasizing the bad guys and not saying thank you to the good guys.

Now there is one additional indictment that I have to deliver. I am afraid I have to indict all of those of us who are in this room. We are invited to the conference as supposed leaders in environmental education in the state. You know what our problem is? This is my conclusion from summing up a number of your ideas: we have been so busy doing own own thing, so busy doing environmental education in our own areas, that we've neglected to tell others what is going on. I think this is one thing that comes through. We're prone to fault the agencies. We are normal like the rest of society. We fault everybody else and think we're doing a fine job. From what I have been hearing, we are not doing as good a job at communicating that which we are doing. It really rests on the fact that if leadership is the key, we are the leaders. We can't pass that off on anybody else. If you aren't a leader you got the wrong invitation. Somebody thought you were. And we must provide that leadership. The general feeling was that we should not perhaps concern ourselves about the fantastically heavy mass program which would flood the state. Nor do we need to create a panic atmosphere. What we need to do is to have key leaders who will, by virtue of the way they live and what they do, set examples for others to follow. To me that is one thing we can all take home and work harder at.

Jean Lloyd-Jones was state president of the League of Women Voters from 1971 to 1975, has been a member of the State Planning Committee of Iowa 2000, and is currently chairing the Iowa Coordinating Committee for International Women's Year.

When I looked at the program and saw that I was the only woman to appear on this podium, I thought those program planners, who obviously were all men, got that far on the program and then thought, "Oh golly, we have got to have a woman. Well, let's find the least threatening one we can and put her at the end. By that time everybody will be gone, and she won't do any damage." But I have to tell you that I will do as much damage as I possibly can in the time allowed to me because I have always maintained that women can get up and make jokes just as badly as men if they were given a chance.

As I visited the workshops and listened to the discussions, which I agreed were very profound and very impressive, I had a kind of deja vu as I went around because I remembered a land and water seminar in Cedar Rapids in 1972, and some of you were there. I remember a land use policies conference in Des Moines later that same year. Some of you were there. Marion Clawson was our speaker. And I remember a conference in Chicago on land use, and several of you were there. And that's where the Georgia senator said, "If you get in the battle for land use, prepare to stay in for a long time because it's not going to be easy and it's not going to be quick." And he said to the legislators who were in the audience, "No politician ever died from an overdose of statesmanship." But very few of them took that to heart. And I remembered the efforts of Dale Cochran, Andrew Varley and Mary O'Halloran who have worked so very hard to get "land use" in Iowa. The discussion reminded me of some that were carried on a couple of years ago in the Iowa 2000 meeting that spread like a kind of yeast across the state and made "land use" a household word in Iowa. Of course, in some households it was a swear word, but anyway it did become familiar in our vocabulary.

Now the problem I have been having with summarizing what was done in the workshops for which I was responsible is I don't know whether the people in my group worked harder or just were less organized and less able to get their words down on paper. But I was having a problem with everything coming in right at the last minute. Up until then I thought I had a fairly good grasp on what you were saying. I was hearing about four things come through. One was the need to make the public aware, whether you were talking about a water resource problem or a land use problem or natural resources or topsoil or educational or organizational matters. You were concerned about how to make the public aware.

The second one was how to develop credible information. There were a variety of agencies and organizations putting out information, and your concern was how can we get all of these different voices focused so that one credible message is coming out that the public can believe. And at some times the conversation got to going along the lines of "Well, if you try to make one single voice, you are going to get into what amounts to censorship or a judge has to decide what it is going to be said, and you get into that sort of problem." But, it was one that concerned all of you.

A third was the need for coordination among agencies and you had different solutions for this. Some of you wanted a kind of loose knit group communication technique between agencies so that you could exchange information. Some of you wanted almost a super agency, an interdependent group, that would meet often and would officially adopt policy.

And fourth, you were interested in getting adequate funding for whatever programs you wanted. This took a variety of forms. I think one of the most interesting was in the water resources panel. The idea came forth of having a user tax, a tax on permits for using water for irrigations or for industrial purposes. There also seems to be, running through the discussion, a great disenchantment with federal funding. I heard several times the expression, "Let's try to solve it here in Iowa with our own money. Let's not take any more from the feds."

One kind of amusing thing I felt. When the Natural Resources group, I believe it was, was talking about what are we going to save, or how are we going to protect our wildlife species, they got into a conversation about the Indiana bat and the fact that you can get the public interested in saving the eagle, but there sure wasn't going to be much sentiment for saving the Indiana bat. I think bats are worth saving even if they aren't very popular.

Now, I am not going to read all those recommendations that you so carefully worked out because I think that would defeat the purpose of what I was supposed to do. I promise you they will be faithfully turned in and you will undoubtedly see it all in print when you get done. And I do want to say one last word. Iowa 2000 has sort of run through here, and I was encouraged to hear that there was so much interest and so much kind of positive feeling about that effort in which several of you are involved. I just want to say that I hope if the Governor calls a conference like this in the year 2000 that he or she will be able to have some heads of the agencies be females so that we can have a nice, mixed group here.

Lauren Soth is an editorial writer with the Des Moines Register and Tribune. He is a member of the Board of Directors of Resources for the Future in the Overseas Development Council, chairman of the National Planning Association Agriculture Committee and a member of the Food Advisory Panel of the Office of Technology Assessment. He is the author of **Farm Trouble, Embarrassment Aplenty,** *and* **Agriculture in an Industrial Society.**

Everybody is impressed here with the conference and I am, too. I was really struck by the fertile minds here, and I enjoyed seeing the minds being mined. Fortunately, mining the mind doesn't deplete it. As a matter of fact, you have no problem in conservation in that area. You develop the mind by using it, and that's what this conference has been doing. And a very useful use of the mind, too, as far as the state of Iowa.

I should add that there's no problem of environmental pollution in this sort of production either. I think it was a very wise choice of managers of this conference to select Ames. Of course, this is a beautiful building and auditorium, but the city of Ames certainly is a worthy place for a group of this kind to meet with its innovations in the high school ECO program and the solid waste disposal plant in the city of Ames. What could be better for a group of this kind.

I'd like to read you something from Thorstein Veblen. I have been going back to Veblen lately and reading *Absentee Ownership*, a book he wrote in 1923. As you know, Veblen was a very satirical, cynical sort of a fellow. No university could stand him very long, and he moved around various places. This is a very satirical, cynical view of small towns in farming areas and of farmers. He held that speculation and real estate was really the only motivation that these people had. Let me quote him, "The country town of the great American farming region is the perfect flower of self help and cupidity. Its name may be Spoon River or Gopher Prairie or it may be Emporia or Centralia or Columbia, "or you could say Fort Dodge, Iowa City, Ames, or Humboldt." The location of any given town has commonly been determined by collusion between interested parties with a view to speculation and real estate. And it continues through its life history; hitherto, to be managed as a real estate proposition. Real estate is an enterprise in futures designed to get something for nothing from the unwary. So farmers and townsmen get together. They are pilgrims of hope looking forward to the time when the community's advancing needs will enable them to realize on the inflated values of their real estate." Well, Veblen thought that the farmers were getting gouged all the time by the townspeople, outfoxed by them but he thought both these groups in rural areas were interested mainly in exploitation and speculation. In 1923 you could see how he might have come to that conclusion after, in this state, seventy-five years of real gung ho development and exploitation, and for the country maybe seventy-five to one hundred or more years. He pointed out the pioneer expansion motive, the desire for growth, the reckless exploitation of resources. But, I think this conference, along with many others of this kind and the activities that you people are in, show that our society is mellowing, becoming conservative on resource use, on permanency of society and its economic institutions. Maybe in two hundred years, nothing else interfering, we would develop a kind of real care and cultivation on a permanent basis that many parts of Europe have obtained. If you have traveled in Germany, England, or the Scandinavian countries you see what I mean. But we don't have that much time. And one of the useful things about this conference is that we see that.

We've had some shocks; we've had an energy shock that took most of us by surprise. We've had shocks on water resources, on our soil resources, and a terrible shock on pollution of the environment from chemicals that we didn't realize was coming on. So now we are sitting down together and beginning to devise ways of department from the thing that Veblen was talking about and establishing a system of land use and of environmental protection that will be permanent. I think in Iowa we recognize particularly that the economic situation had much to do with our present state of exploitation and reckless use of resources. When we got the chance here recently to go all out, and this applies to the whole agriculture area of the United States--unlimited production for a big foreign market, a profitable foreign market--we were glad to do it, and we forgot about some of the lessons of conservation and protection of water and soil that we had begun to learn in the thirties. Now we are reappraising this matter of soil waste and the pollution danger that comes from over production, over industrialization of agriculture.

The chairman mentioned the fact that I went to Russia. I went there a couple of times. One thing that strikes every visitor to Russia from the United States is the similarities. They are "communists" and we are "capitalists," but we both have tended to emphasize bigness and size. We like big farms, big fields, big tractors, big buildings; and we have both been trying to industrialize agriculture. We have both been trying as hard as we can to make the methods of the factory apply to the farm. Karl Marx, you know he was a city fellow, said that he referred to farming as the idiocy of rural life. His solution, one that the leaders of Russia, particularly Stalin, have tried, was to relieve this idiocy by making farmers factory workers. Mass production methods. Big machines. Big areas.

Now we shouldn't laugh. We are doing it under capitalism. We have done many of the same things and in our hectic development of agriculture on this scale we have caused and we are now facing problems of misuse of the land and of the water. The energy crises and the spill over of chemicals in Fort Dodge, other types of pollution from chemicals, and health problems from various chemicals are now forcing us to rethink and adopt less exploitative methods.

As the others have said, the emphasis in this meeting on education, on the need for public understanding of the problems, has struck me, too. I didn't attend all these little subgroups, but I did sort of concentrate on the panels on education, lead by Dale Brentnall of Ames, Larry Benne, and Robert Rye; and the one on water by Jim Cooper, Margo Underwood, and Wayne Merkely; and the one on land use by Frank Schaller, Louise Moon, and Lyle Baker. And, in all three of these groups, I noticed that they were feeling the importance of the need for consistent information. They understand very well that there's no TRUTH on many of these subjects, but the need for reliable, understandable information, and a presentation of problems and of alternative solutions to these problems, choices, political choices for the most part.

In the education group they talked about the need for the public to see that action in a government organization on an environmental issue is being carried out consistently and fairly, that there's follow-through and that they can see some results. Only in this way can you really change the philosophy as some have mentioned to an environmentalist/conservationist point of view.

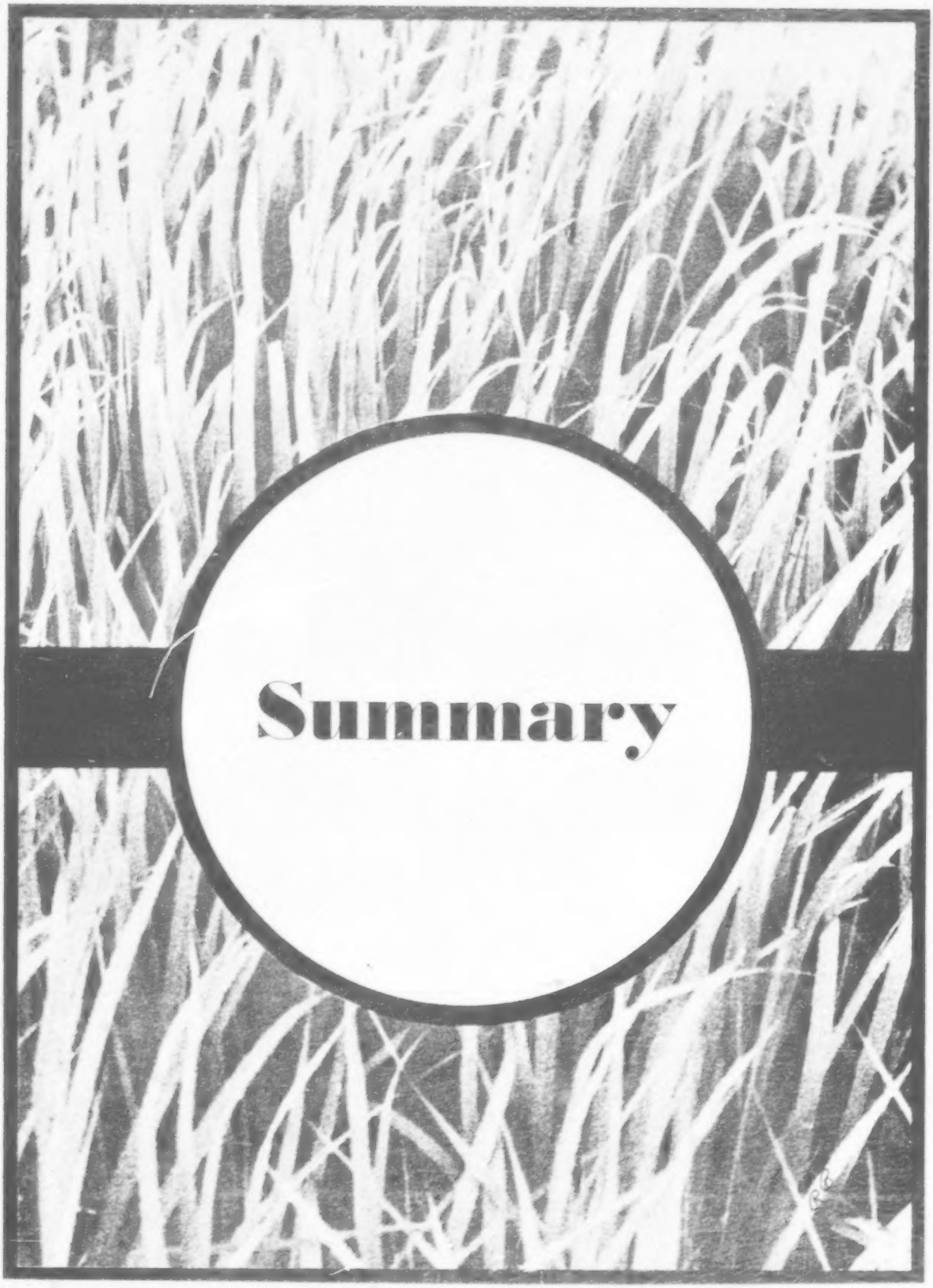
On land use and water, those groups spoke along the same line and talked about the tough conflicts of interest that we all know are there and must be reconciled, must be faced. Short and long run trade-offs and the one that Marion Clawson emphasized this morning, the conflict between the economy and jobs and what you can do next week or next year on the environment, and in a conservation way. This group, the land use group, decided that accomplishing some of these reforms would take more than just the land use plan and a land use planning institution, but also the use of incentives including subsidies for some kinds of conservation work and deterrents or some form of compulsion--a mix, as Marion Clawson said, of voluntary and compulsion--in meeting the plan, the program. The water group thought that the state needs a more complete water plan for the state with permits for water use issued on the basis of priorities, with the help of advisory groups.

I have a book full of notes. You don't want to hear all that. You have been through it, but I wanted to mention just a few things. You won't believe this, I don't suppose, but when I picked up this notebook on a bookshelf at home, it had some notes in it. These I wrote, I don't know how long ago. It seemed to fit with what I wanted to say here. I wrote down, "Technology in our economy must be regarded as a form of capital for purposes of economic analysis. Technology can be produced by essentially the same process as capital goods. That is, by mobilizing money, scientific research, men and women, that is brains, we can determine with wide ranges the kinds and amounts of new technology produced. The directions we take in technology are not accidental, by and large, but are determined by how we spend for science and technology." It seemed to me that when we are talking about protecting the environment and conserving our resources for the long run, preventing waste, the first thing to do is to allocate our research money into supportive types of research. Everybody in this room was in the groups that I listed was talking about the need for knowledge. We can do something about that. We can allocate funds for research in soil, water, environmental problems, coal, and that's what we should do.

Governor Ray spoke this morning. I couldn't be here so early, but I understand that he emphasized the three things that are hot in the legislature: the land use bill, the returnable cans and bottles, and protection against spills of dangerous substances. These are all items that must, in my opinion, go forward. But underlying these immediate problems is getting our knowledge base for what we want to do and the public education to go along with it. That leads me to a wrap up here, to mention the program beginning this fall--the Iowa 2000 committee and the Iowa State University Extension Service, with the Iowa State University Extension Service doing the work, and the Iowa 2000 committee sitting around and applauding. They are going to begin a program that the aim is exactly what these people have been talking about. To provide credible information and to show the alternatives that are available in meeting the problems--land, water, and energy. The idea is to increase the understanding of our natural resource base, not only in Iowa, but in the nation. I said increase understanding. I didn't say get the facts, because the facts are in dispute by the best of our scientists, but we can focus on, we can eliminate the extremes of these ranges of estimates. Take energy as an example. Suppose there is a difference of fifty or one hundred years in an estimate of how long the oil is going to last. What difference does that really make in our planning for energy in the future? Not very much. If Ralph Nader is right, and we do have plenty of oil for a hundred years, I'm cheering. I think we still have to begin to understand how to use other forms of energy, and we have got to start on it pretty quickly. The second thing this program will do will be to place resources in perspective in the Iowa economy and in the U.S. economy. Third, to increase understanding of the existing and proposed policies on resource use and development, on our natural resource base and focusing these supply problems on our food goals, our export goals, and the level of environmental quality we want to achieve.

The Iowa 2000 committee hopes to follow the Extension Service's program on this, which will be a series of district meetings over the state during the next winter. We hope to follow this by obtaining Iowan's views on what they think the policies ought to be.

Thank you very much.



Summary

INTEGRATED THEMES, RECOMMENDATIONS, AND CONCLUSIONS

In reviewing and editing the proceedings of the Governor's Environmental and Conservation Conference, four major topics or themes seemed to emerge from an integration of the content provided by each of the speakers, the mini-university sessions, and the small groups. These four themes are:

1. Developing public awareness and adult education
2. Public school education
3. Governmental action
4. Energy and Natural Resources.

A summary of the problems, recommendations, and conclusions in each of the four theme areas has been developed by pulling together statements from each of the small groups. These statements were sorted by theme area, developed into a narrative, and edited for clarity. A concerted effort was made to capture the combined thinking of the participants in the conference while fully realizing that the task was not entirely possible.

DEVELOPING PUBLIC AWARENESS AND ADULT EDUCATION

I. The Problem

The general public and many educators have a limited concept of "education." Therefore, a problem exists in implementing environmental/conservation education programs into both formal and non-formal community education. The problem is manifested in the lack of environmental/conservation education programs for those not enrolled in public school programs and in the lack of basic scientific concepts among the general public. A program is needed that will emphasize group education and individual education, and will provide a forum for the diverse and often opposing viewpoints that currently divide public attitudes on conservation and environmental practices.

Problems facing the implementation of any program for increasing public awareness are: 1) achieving immediate results; 2) realizing the needs and values of people; 3) overcoming prejudices, customs, and impressions; 4) developing a concern for future generations; and 5) overcoming a satisfaction with the **status quo**. The general public currently lacks a realization that environmental and conservation problems are real and that there is a need for action.

Our current population, adult and juvenile, is conditioned to accept material possessions as reflections of economic status. It is acclimated to conveniences that are speed oriented, and it operates with a mind set that uses quantitative criteria rather than qualitative criteria in decision making. Advertising has the public programmed to be users rather than conservers or recyclers, and the autonomous existence of most people discourages their cooperation in a sense of community.

In maintaining current life styles, little attention is given to what is being taught to children by the actions of adults. Occupations are reflected as unfulfilling activities, and consumption is often promoted as the means to increase self-esteem. Alienation from society and infringement on the rights of others, especially future generations, are increasingly reflected in attempts to find the "good life" and to be insulated from the natural environment.

Contributing to the resistance of the general public to a change in life style is the lack of credibility and consistency in the identification and definition of environmental/conservation problems, as well as in the proposed solutions to these problems. Clear, factual communication programs that are aimed at reaching all facets of society are lacking. Often, too much information is provided in too short a time span and is presented through visually confusing and improperly prepared materials. The information lacks research documentation or provides conflicting information regarding the economic impact that can be expected. Public education programs are not sufficiently coordinated. They need to improve their information base and the clarity of their presentations. Such programs are understaffed in Iowa. They do not provide an appreciation of needed political action, nor do they provide the general public with enough information to demand good legislative judgment. They are lacking in support facilities and funding, and they have been unable to persuade the media that environmental and conservation projects should receive primary consideration in public service requests.

II. Recommended Action

Interest in environmental/conservation education must be increased above the casual level. The public must be educated to the immediacy of the current problem and the action that is necessary to prevent future problems. The public must be involved in programs that provide for local interaction in the development of both state and local goals, for the reconciliation of diverse and opposing viewpoints, and for the expression of individual ideas. Finally, they must receive evidence that their ideas are given consideration.

The goal of conservation/environmental education must be establishing an environmental ethic. This ethic must be reflected in peer acceptance of conservation practices, responsible commitment by urban and rural population, support from businesses, and in other appropriate actions. It must recognize that efforts, regardless of how small, add up to results.

Conservation/environmental education must be promoted through schools, churches, service clubs, civic organizations, news media, and trade organizations. It should develop and support adult education programs presented through radio and television, farm organizations, and programs like Iowa 2000. It should incorporate both business and industrial training programs, and enlist the support of experts. The programs must have a practical basis and result in workable plans of action that can be carried out by local civic groups as well as statewide organizations. The need must be felt by educators and must be coupled with demands to the business world for participation.

III. The Recommended Program

Any program developed to meet the problems of public awareness and adult education, that have been addressed here, must be concerned with the types and levels of education that are needed to reach the different levels of society. The program must develop a public awareness of the depth of the problem and the need for the public to change habits of resource use. It must make the public aware of our life styles and the impact that they have on our environment. The program should include the study of wildlife, geology, biology, climate, water, leisure time activities, health, history, and spiritual renewal. It should emphasize that by learning more about our human cultural history we can understand our present culture better and better plan our future. Finally, the program should promote a feeling of stewardship toward the environment that transcends personal ownership. Mankind is part the natural systems.

All organizations--public, social, labor, farm, etc.--should be enlisted to assist in the development of a community program. Religious organizations should be encouraged to cooperate through their educational programming. The media should be cultivated regarding programming that emphasizes environmentally compatible life styles. Public recognition should be given to people who employ alternative life styles compatible with the environment.

An adult/community education program should include an emphasis upon open spaces and their role as indicators of our health. Good, professional quality radio, T.V., and print materials should be developed to emphasize the purposes of open spaces; and these materials should be released through IPBN, commercial radio and television stations, and newspapers throughout the state. The materials should provide awareness of existing open spaces, their unique features, and their contrast to highly urbanized areas.

Guidebooks should be made available to help individuals interpret existing open spaces. These guidebooks should emphasize the role of the open spaces in providing habitat for wildlife and in preserving rare and endangered species of both plants and animals. The natural regeneration and renewal process should be highlighted and the value of open spaces to farmers and land developers should be emphasized.

A community program in environmental/conservation education should key on diverse groups having different opinions. Common goals should be established and interaction between individuals with different viewpoints should be stimulated. The program also should emphasize recreational activities that are less energy intensive, construction of demonstration units illustrating energy efficiency, and assistance to participants in the development of action strategies.

In planning adult/community education programs, thought should be given to developing sensitivity-awareness workshops and providing contrived experiences in alternative life styles. These programs should include a concern for the impact of developing new sources of energy, interpreting and using advertisements effectively, choosing products that are efficient and repairable, and counteracting the fear people have about change. Suggestions should be provided concerning socially acceptable and economically feasible alternatives in energy and resource use.

Adult and community education programs also should be concerned with instilling a land ethic among the state's citizens. Included in this emphasis should be the proper use of tools to prevent erosion, the need for concern for soil

conservation in planning construction and the need for clean water. The profits of conservation should be emphasized in the program and incentives provided for individual action.

In developing the program, consideration should be given to the innovative use of public media to create an awareness of resource management problems, the consequences of various alternative life styles, and the effects of continuing present resource uses. A television special on "The Cost of Convenience" might be developed to present these issues.

Wherever possible, adult and community education programs should use existing organizations or activities. Community organizations, service clubs, neighborhood meetings, church groups, etc. should all be investigated as means to reach the citizens of the community. County and state fair themes might be used to increase the awareness of people and to emphasize issues. The Public Affairs Institute might be contacted to conduct a year-long program on stewardship and the conservation ethic. Extension programs might be developed to make planning commissioners, city and county officials, and others in local leadership positions aware of the principles of wise natural resources. And, the entire community might be provided a "town meeting" format to discuss issues.

Any successful community/adult education effort must emphasize what man's misuse of the environment has cost in order to make people aware that the attitude of doing "what we want, when we want" must change. It must inform people of current laws, how they are helping and what are their weaknesses. It must re-examine the impact of our life style and of alternative changes in our life style upon the remainder of the world. Finally, the success of any such program will depend upon providing recognition and rewards to communities and individuals that model good environmental stewardship.

PUBLIC EDUCATION

I. The Problem

Generally, public school students in grades K--12 in Iowa receive inadequate instruction in the extension of basic concepts into environmental implications and applications and the individual actions necessary to contribute to the solution of problems. The efforts that are made to create an environmental literacy are too frequently fragmented, unclear, poorly coordinated, and not communicated between teachers, grade levels, or disciplines.

Not all educators have seen the need to accept responsibility for environmental/conservation education. Many are reluctant to accept responsibility for environmental/conservation education because they are afraid that some environmental issues may be too controversial to be dealt with in the classroom. Instead of accepting the responsibility for conservation education, the school and educators reinforce adult behavior that places little importance on practices that conserve energy and resources.

The majority of Iowa educators are not prepared to teach environmental/conservation education and have an insufficient understanding of the complex interrelationships of environmental issues. Those who have not received preparation in these areas during their professional education are generally not prepared to provide environmental instruction to their students.

Contributing to the lack of environmental/conservation education in the public school curriculum are: the lack of a set of state objectives and standards; the lack of time to incorporate environmental/conservation education into the curriculum; and the lack of adequate funding to develop programs. The current emphasis on "back to basics" in education has led educators and school boards to be reluctant to incorporate new programs into the curriculum. For environmental/conservation education to succeed in the public schools, basic concepts such as mankind's interdependence with the natural system, must become a basic under the leadership of a state plan for environmental

education. Public awareness for the need for conservation/environmental education must be developed. Frustration by teachers with past failures must be overcome and new strategies employed. The feeling of helplessness in effecting change must be countered. A first step might be the development of a common definition of environment and a set of guidelines for program development.

II. Recommended Action

At the area or local level there is a need for increased assistance to educators. More trained consultants are needed at the area education agency and county conservation board level to provide assistance to teachers in: acquiring existing materials, developing resources in local libraries, developing local advisory councils for environmental/conservation education, and developing working commitments with local schools. Administrators, school boards, and the public must be convinced that there is a need for environmental/conservation education. They must be committed to provide the dollars and released time necessary for the training of individuals involved and for the development of the program. Emphasis should be placed on training all teachers including English, math, history, science, reading, and physical education teachers. The curricula developed should emphasize the interrelationship between the objectives of individual classes and a complete environmental/conservation education program.

Teachers need specific training to help them work in unfamiliar areas such as the affective education necessary to change values and attitudes. They should be encouraged to attend environmental/conservation education conferences and courses where they might receive that training and should be actively involved in the writing necessary to develop their own environmental/conservation curriculum.

Cooperation between school districts and county conservation boards or other governmental units is needed to acquire open spaces that will be available for use in the educational program. An eventual goal should be an outdoor classroom as a part of each public school site and a program that emphasizes use of existing facilities near the school.

Finally, assistance should be provided to local school districts in meeting the financial obligation of expanding environmental/conservation education into the curriculum. Efforts should be made to share this obligation between the district, the state, and the federal government. Assistance should be provided to local districts in acquiring state or federal grants.

At the state level, legislative action should be taken to expand the existing environmental/conservation education requirements to include all teaching levels. Such a requirement should include education concerning the importance of open spaces to the health of our environment and the establishment of mandatory educator attendance at workshops on energy conservation. The requirements should be administered by the Department of Public Instruction.

The Department of Public Instruction and other education institutions should cooperate in developing general guidelines for learning in environmental/conservation education and provide for in-service instruction of teachers. A set number of hours of experience in this type of program should be required of all currently certified teachers, and become a part of the pre-service education of future teachers. Teachers hould receive released time to attend these in-service programs and participation should be required for administrators. The in-service education program should be multidisciplinary in its approach, include concepts from both sciences and social sciences, provide field experiences, be coordinated on a statewide basis, and be a partial fulfillment of an environmental/conservation education certification endorsement.

With the aid of specialists in the field, the Department of Public Instruction should develop state guidelines for environmental/conservation education. The guidelines should provide a well-defined, adaptable, credible K—12 curriculum. Resource materials should be included for K—Adult curriculum. The guidelines should include:

1. A summary of the need for the guidelines.
2. The necessary objectives of environmental/conservation education.
3. Goals of the training program to accompany the guidelines.
4. A training model.
5. A time line for development and implementation of the guidelines.
6. A procedure for involving all school districts.

7. Budget and funding sources for the development of the guidelines.

8. Procedures for writing participation by teachers.

9. A planned pilot training program for teachers including procedures to obtain some commitment from the teachers when they complete the program.

10. Field testing of materials.

11. A K--12 scope and sequence.

12. Involvement from as many sources as possible (universities, area education agencies, community resource personnel, state agencies, etc.).

13. A practical outline for implementation of legislated curriculum offerings.

14. Continuous evaluation of the training model.

15. A mobile in-service teaching lab coordinated by the Department of Public Instruction.

Funding should be provided for the dissemination and implementation of the guidelines. Determination should be made of the existing available funds from local, state, and federal sources; and efforts should be made to acquire additional funds from private sources, i.e., Iowa Public Service, Westinghouse, and government sources, i.e., Soil Conservation Service, Department of Public Instruction, General Assembly. At least part of the cost of local implementation of the plan should be assumed by the state.

III. The Curriculum

The curriculum in our public schools should be modified to promote a behavioral philosophic change in students, in professional educators, and in the general public. Environmental/conservation education needs to be implemented as a multidisciplinary approach with teaching materials expanded to include all teaching areas and a curriculum emphasizing conservation at all grade levels. General guidelines for such a curriculum are the emphasizing of awareness in grades K--4, hands on experiences in grades 5--8, and interdisciplinary studies in grades 9--12.

In developing this conservation/environmental education emphasis in the schools, care should be taken to involve other organizations in the community with special concern given to including those organizations with special knowledge, resources, or problems.

Emphasis in the curriculum should be placed upon:

1. Economic realities and economic impacts of environmental issues.

2. Energy conservation.

3. The impact of personal demands for needs and comforts upon the environment.

4. Problems, practices, and principles of soil conservation.

5. Natural resource management principles.

6. The interrelations of man's activities and natural systems.

7. Land use implications.

8. The need for clean water.

9. The value of our cultural heritage.

10. The permanency of the environmental crises.

11. Individual responsibilities in conservation.

12. Alternative life styles.

13. Aesthetic values.

14. Procedures for political action.

15. Low energy consumption recreation and exercise.

16. Fairness and ethics.

The curriculum developed should examine long standing traditions that may have an adverse affect upon the environment or upon conservation practices and include hypothetical future scenarios which depict alternative life styles. In career education, the curriculum should examine the impact of unfulfilling jobs upon excessive consumption of energy as people seek ego satisfaction and energy intensive recreation.

Attitudes and values that emphasize quantitative rather than qualitative criteria should be examined. Media advertising that influence people to be consumers rather than conservers or disposers rather than recyclers should be analyzed, along with the current emphasis upon television and electronic games as recreational sources. Current transportation and auto buying practices should also be examined.

The environmental/conservation education curriculum should be built into programs that have already been established. Areas for incorporation should include those disciplines that have not traditionally been associated with environmental/conservation education. Physical education can be adapted to include an emphasis upon lifetime exercise and recreation that is low in energy consumption. Government courses can be used to study political action in areas of environmental concern, and literature classes can analyze environmental appreciation or alternative life styles depicted in literature of all periods and all cultures. Non-school programs such as the Youth Conservation Corps or Outward Bound incorporate physical education, industrial arts, and environmental/conservation education.

The environmental/conservation education curriculum should include a study of life styles and interests of students with their relationship to an environmental ethic. It should also provide out-of-classroom experiences for students. Research in the local community, development of open spaces acquired by the school or county, community application of conservation principles, and/or community investigation of and participation in environmental problem solving are all experiences that should be promoted for students.

The "new" environmental/conservation education curriculum does not require disposal of the "old" curriculum or the disposal of some part of the curriculum to "make room for" environmental/conservation education. It does require aware, concerned, and imaginative teachers who have the background and desire to use opportunities within their existing curriculum.

GOVERNMENTAL ACTION

I. The Problem

Currently there is a lack of coherent public policy and a lack of communication between citizens and their legislators regarding conservation/environmental issues. As a result of this lack of policy and communication there is a failure to fully utilize existing legislation and to develop appropriate actions to implement immediate and long-term resolutions to environmental/conservation problems.

Contributing to the lack of public policy are the prejudices that exist between groups espousing environmental concerns and members of government at all levels. There is a tendency for both groups to over-react which leads to the development of poor programs. There is a need to recognize the difference between idealism and economic fact, and to develop an understanding of the trade-offs necessary to achieve good environmental protection in both the short and long run.

Communication is necessary if regulations and controls are to have public acceptance. Procedures need to be developed to allow all interested parties to voice their concerns and to provide reasonable change toward environmental goals. As these procedures are developed, attention must be given to the encroachment of government conservation programs on individual liberties and concepts of individual freedom.

In addition to public acceptance, any plan of action must provide for the cost of enforcement. The responsible management agencies must receive adequate funding to be able to enforce existing legislation and any new legislation that may be developed.

II. The State Legislature

At the state level, incentives need to be developed for the application of wise resource management procedures. Incentive procedures that need to be investigated and, if satisfactory, implemented are: individual grants, tax incentives, cost sharing procedures, low interest loans, and changes in policies of lending agencies. These incentives need to be applied to all areas of resource conservation, as well as to the adoption of new sources of energy.

Legislative consideration is needed in all areas of resource use and conservation. The legislation should consider both economic incentives and penalties for failure to comply. Among the specific areas requiring legislative action are:

1. Funding of Iowa's conservancy districts.
2. Handling of hazardous waste materials.
3. Incentives for insulation or mandatory requirements for insulation.
4. Tax incentives for use of solar energy.
5. A state water plan.
6. Increased funding for soil conservation practices.
7. Establishing priorities in resource use.
8. Regulating of billboards along highways and in cities.

III. A State Land Use Plan

The citizens of Iowa require education regarding the need for a land use policy that emphasizes the need for saving prime agricultural land for production of food and fiber, and the need to maintain a stewardship of all land. The education regarding a land use policy should address the control of urban sprawl, control of soil loss, the legal ownership and care of property, and the insurance that each land parcel is put to its best use.

The public education on land use should involve local citizen input into the development of land legislation. Public hearings should be held throughout the state regarding existing land usage and needed controls. They should address the uniformity of county and municipal zoning laws, the composition of zoning boards, the tax considerations related to land use, and patterns of urban development.

The land use law developed should address the following issues:

1. Preservation of prime agricultural land for farming only.
2. Returning land to its original state of productivity, or better, following the mining of mineral resources.
3. Full protection for areas disturbed for construction or road building, including required soil suitability tests and soil conservation practices for all construction.
4. Public oversight of highway construction and a prohibition on diagonal highways.
5. Siting of industrial areas and public landfills.
6. Strip residential development.
7. Development of taxation and loan policies to allow for long-range development.
8. Controlling urban sprawl and directing urban growth to provide for assessment and maintenance of the integrity of natural resources.
9. Protection of disturbed areas and preservation of open spaces.
10. Coordination of governmental agencies responsible for various aspects of land use.

IV. The Governor

The Governor of Iowa should establish a public advisory committee to provide inputs to environmental/conservation policy and to the enforcement bodies of the state government. The advisory committee should be assigned the responsibility for developing a machanism to assess the short-term and long-term environmental and economic impacts of governmental decisions. The assessment should encompass state and local government decisions. The advisory group should be dynamic and independent, and procedures should be developed to prevent inbreeding and special interest conflicts within the group.

An Inter-Agency Council should be established to identify natural resource issues, use and limitations, and to draft policy recommendations. The Inter-Agency Council should be responsible for coordinating actions between agencies, explaining laws designed to protect the environment, and reducing the lag periods for responses by agencies to specific environmental/conservation problems.

The Governor should become a public advocate and sponsor for programs to encourage less energy use in educational and public buildings, to encourage more imaginative use of public lands and buildings, and to encourage local review and revision of codes regulating natural resource use. Programs that might be initiated by the Office of the Governor are a Save Iowa Land program and an annual Governor's Award for Environmental Awareness.

V. Federal Action

The federal government should conduct a National Environmental Needs Assessment. The purpose of this needs assessment should be the development and dissemination of a credible and consistent definition of the environmental/conservation problems facing the United States and alternative solutions to those problems.

Federal action is needed to establish workable regulations for good production. These regulations should set limits on the production of food for export purposes. It also should include tax incentives for implementing erosion control measures, economic incentives for cow-calf and livestock production, and should place partial responsibility for conservation costs on the consumer. Base years for federal allotments should be eliminated or changed to allotments based on land capability. Cost share assistance for installation of conservation measures should be offered and incentives for meaningful soil erosion control should be developed.

A national energy plan must be placed in action now. The plan should include legislation to protect rights to solar energy, to provide mandatory energy efficiency ratings on appliances, and to meet the needs of mass transit and regulated vehicle use. In addition, special interest groups and corporations should be forced to supply specific data supporting their propaganda or advertisements.

ENERGY AND NATURAL RESOURCES

I. The Problems

We are living in an era that has witnessed the rise in use of disposable products, the use of television to psychologically increase demands for products that are environmentally damaging, and a public mind-set that economic status is reflected by conspicious consumption. A predominant question of our age has become, "Will our consumer oriented life style become so important that we will destroy our very existence in the pursuit of that life style?"

Our economic system is one based on dollar accounting rather than environmental accounting. Efficiency is graded on increased production in shorter periods of time, rather than increased quality with less consumption of resources. Increased employment is equated with increased production, rather than increased repair and recycling. Profits and losses are figured on a short-term, immediate basis, rather than on long-term projects.

The lack of credible, consistent definitions of the environmental crises we face have made John Q. Pubiic apathetic. There is an increasing lack of conviction that significant results can be accomplished by starting at the local level. Our society increasingly depends on legislation, instead of education and personal decision making to determine its life style.

The public must realize that the acquisition of luxuries by a few prevents the acquisition of basics by many. Isolation between people must be reduced and cooperation in a community sense increased. Serious consideration must be given to modified standards of living based on consumption and increasing standards of living based on community health. Finally, awareness must be developed that on a global scale the United States is "the few" that is diminishing the acquisition of basics by many.

A feeling of stewardship toward aspects of the environment that transcend individual ownership must be developed and a shift from the present to the future as a base for evaluation must be accomplished. Organizations of all kinds, including industry, must be involved in making these changes.

An independent data base, separate from regulatory agencies and corporations, is needed to identify environmental problems and provide the basis for research and educational programs to solve the problems. Resource uses and limitations needed to be defined and a clearinghouse is needed to disseminate information.

II. Land

A major problem facing the use of our land resources is growing sufficient food and fiber to meet the nation's needs without destroying soils and damaging water resources. Attention must be given to land lost to water and wind erosion, conversion of marginal lands to more intensive use, overgrazing on public and private range and pasture land, selection of crops, overuse of fertilizers and chemicals, and energy allocation for agriculture. Other land uses that must concern the citizens of Iowa are urban sprawl, reforestation, sanitary landfills, recreation, and mining. Attention should be given to developing a standard soil survey to provide for proper management of land use. In addition, restoration of disturbed land and rehabilitation of strip mined land must be accomplished.

In agriculture there is a need for achieving peer acceptance of soil conservation techniques and legislative support for increased incentives for proper soil conservation control. We need an economy where farmers can afford to practice conservation. Tree planting, contouring, terracing, drainage systems, and impoundments need to be provided in proper locations to provide for conservation of the topsoil. Education and research should be developed to point out economic benefits and instill land ethics in land owners and users.

Mono-culture agriculture, as practiced in Iowa, places increasing demands on energy sources and on chemicals for weed and pest control. Agriculturalists must adopt to the methods of crop selection that can reduce these demands and make careful use of chemicals to prevent contamination of land, water, and animals. They must also be provided with the economic incentives to make reduction of energy use profitable.

There is a need for land left in its natural state and for the preservation of unique, natural areas. These areas are important to the study, research, education, and protection related to the natural support systems needed for man's survival. An assessment of the existing areas in Iowa should be completed in coordination with the proposed state critical area inventory. This information should be prepared and catalogued, and efforts made to point out specific areas and their values to local citizens. Attempts should be made to put an accurate monetary value on these open spaces and to point out what can be done with open spaces in the future.

Open spaces reflect cultural values and should be available to the public. Wherever possible efforts should be made to develop multiple use areas and to arrange for proper use of all existing open spaces. Easement to private rural open spaces should be provided to allow urban populations to gain access to open spaces for recreation and to instill a kinship (a sense of belonging) to the natural environment.

Open spaces are also important in wildlife management. Efforts must be made to provide habitat for fish and wildlife through open spaces. If open spaces are not maintained, then few wildlife habitats will be left in our agricultural state.

Urban sprawl is a major concern of those interested in conserving the land resources of Iowa. The question that predominates in this area is, "Can we justify the limitation of population to preserve agricultural land?" Presently population in Iowa is concentrated in specific areas, but is increasingly spreading into agricultural areas. Attention must be given to providing suitable housing that provides for space and privacy, while limiting the encroachment on prime agricultural land. Multiple housing, land reclamation, and restoration of delapidated and decaying areas must all be incorporated as means to diminish the impact of urban sprawl.

III. Water

Closely associated with the problems of land are problems of water. In an agricultural state animal wastes, chemicals, and erosion from farm lands all effect the quality of water in the state. In addition there are competing uses for water which must be fairly adjudicated. These competing interests include irrigation, flood control, energy production, animal and fish habitats, industrial use, waste treatment, and drinking supplies. Each has its own requirements for quality and places its own effects on the overall quality of water in the state. Efforts must be made to develop a state water plan to address these problems.

IV. Energy

The major resource problem recognized by the citizens of Iowa today is energy. Our economy and life style has become more energy consumptive than any other society in the world. Our high energy use has made us dependent on foreign sources and has severely altered our balance of payments in international trade. The resulting imbalance has placed increased pressures to increase agricultural production on Iowa land.

Our society has developed a life style that is based on unlimited consumption and disposable everything. It emphasizes high mobility and energy intensive recreation **as the optimum of the** "good life." But, it has become vividly apparent that this energy intensive "good life" cannot continue. We must use less energy or eventually have no energy. The movement to reduce energy consumption raises a problem of providing equitable distribution of energy at equitable prices and reducing energy consumption without severely penalizing the bottom layers of the social strata. To accomplish these changes will require committed efforts by all citizens.

Initial efforts in reducing energy consumption can be made by individuals and industry. Each individual can cut down on their use by changing their life style and making moderate changes in their home. Industry can help by continuing to promote insulation of homes, by labeling appliances, by building energy efficient buildings, and by promoting more efficient transportation uses by their employees.

Steps need to be taken to reduce gasoline consumption. A first step is to improve public transportation facilities. Research on alternative methods of public transportation and on public attitudes toward mass transportation are needed. At present there is a shortage of management information and scientific study in this important area.

In the area of electrical energy, two major problems must be addressed: 1) How can we use Iowa coal without adverse effects on air and land? 2) What problems in the use of nuclear power are unique to Iowa? An associated problem is determining the desirable level of growth for population and industry in Iowa. Research into these problems must be continued, along with increased emphasis upon conservation by the public and industry.

Iowa should establish a model energy conservation program. The program should include stimulation of alternative sources of energy: solar, nuclear, wind, animal waste, coal, and waste heat. It should also emphasize a reduction in energy intensive life styles with as little impact on the quality of life as possible. Finally, the Iowa model should support a national energy program and recognize that conservation alone is only a "band-aid" solution relative to our future. We must broaden our outlooks from energy to the overall horizon of our natural resources.

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